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FM 10-14

DEPARTMENT OF THE ARMY FIELD MANUAL

Withdrawn from Order 15h

QUARTERMASTER BAKERY COMPANY MOBILE

DEPARTMENT OF THE ARMY • OCTOBER 1950

DEPARTMENT OF THE ARMY FIELD MANUAL
FM 10-14

This manual supersedes TM 10-415, 24 July 1943

QUARTERMASTER
BAKERY COMPANY
MOBILE



DEPARTMENT OF THE ARMY · OCTOBER 1950

*United States Government Printing Office
Washington: 1950*

DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., 11 October 1950

FM 10-14 is published for the information and guidance of all concerned.

[AG 322 (7 Apr 50)]

BY ORDER OF THE SECRETARY OF THE ARMY:

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DISTRIBUTION:

Tech Sv (2) except 10 (100); AFF (10); OS Maj Comd (5); MDW (5); A (20); Bn 10 (2); Sch (2) except 10 (150), USMA (20); Army Area Food Sv Sch (30); T/O&E 10-147 (12); SPECIAL DISTRIBUTION.

For explanation of distribution formula see SR 310-90-1.

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CHAPTER I

INTRODUCTION

Section I. GENERAL

1. PURPOSE

This manual provides information necessary for the efficient functioning of the Quartermaster Bakery Company, Mobile (T/O&E 10-147, 22 October 1948).

2. SCOPE

a. The manual discusses the mission, organization, and operation of the quartermaster bakery company, mobile. It gives directions for the functioning of the bakery platoons when operating as separate units and serves as a guide to publications giving specific information on how to carry out these directions.

b. No attempt is made to prescribe use of the mobile bakery company in all situations. Since actual conditions under which components of the company may be utilized vary widely, strict adherence to the provisions of this manual is not always feasible. Responsibility for operation rests upon the commanding officer, who must work out the details of operation and the use of personnel and equipment as the situation demands.

c. The manual does not include complete technical operative and maintenance information. For

detailed information on the mechanical operation and maintenance of the bakery unit, see technical manuals of the 10-1699 series.

Section II. THE UNIT

3. MISSION

The mission of the mobile bakery company is to bake bread for the armed forces in the field (fig. 1). The unit will be responsible for the pickup of operating supplies from, and the delivery of bread to, distribution points when the round-trip time does not exceed 10 hours.

4. ASSIGNMENT AND CONTROL

a. In the combat zone the mobile bakery company operates under the direction of the army quartermaster. Normally, the bakery company (or its elements) is assigned to support army supply points, the size of the bakery unit depending upon the number of personnel served at the supply point. Situated at the supply point, the bakery company can produce bread for issue with the daily ration breakdown and also draw necessary bakery ingredients quickly.

b. The mobile bakery company (or any of its platoons) may be assigned to supplement the production of semipermanent and/or garrison bakery units as the situation demands or as directed by higher authority.

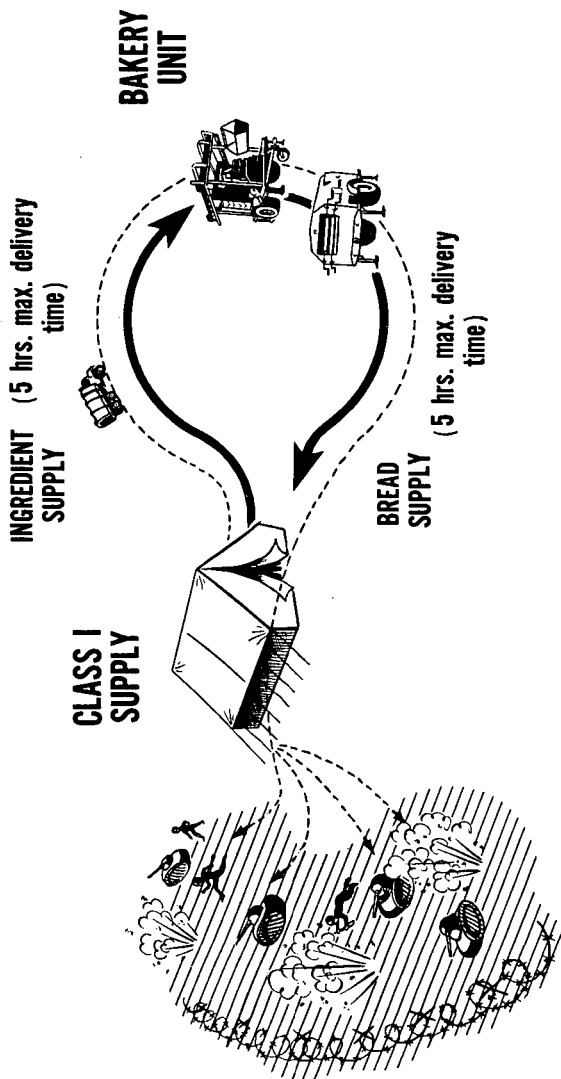


Figure 1. Mission of the bakery company, mobile.

5. RELATED UNITS

a. The mobile bakery may be placed under a headquarters and headquarters detachment, quartermaster battalion (T/O&E 10-536), along with the quartermaster subsistence supply company (T/O&E 10-197) to furnish class I requirements.

b. The mobile bakery may also be placed under a headquarters and headquarters detachment, quartermaster battalion (T/O&E 10-536), along with other quartermaster units to provide a balanced quartermaster service.

6. CAPABILITIES

The mobile bakery company is capable of making 48,000 pounds of bread per day and serving 96,000 individuals. Each platoon is capable of operating separately and making 16,000 pounds per day and serving 32,000 individuals. These figures are based on a daily bread ration of 8 ounces per man.

CHAPTER 2

TRAINING

Section I. TRAINING OF INDIVIDUALS

7. GENERAL

The purpose of individual training is to insure that each member of the mobile bakery company has completed the prescribed basic training and to produce in the company well-trained individuals, proficient in their duties and in the duties of the next higher position. Since there is rarely opportunity for comprehensive training after a company or one of its elements goes into a field, the company commander, platoon leader, and key personnel must utilize the training period in the continental United States to bring the efficiency of the bakery personnel to the highest degree possible. Each individual should have training in the duties of one other individual in addition to his regular duties.

8. SCHOOL TRAINING

Whenever time and conditions permit, the personnel of the mobile bakery company should be encouraged to complete a course of instructions in a technical service school teaching the latest techniques applicable to their duties. By contacting the appropriate S-3 officer, the company commander can learn what courses (both training and refresher) that per-

TRAINING PROGRESS CHART

BASIC										TECHNICAL										TACTICAL AND LOGISTICAL													
Unit 102nd QM Bakery Co.																																	
T O E 10-147										Date 22 OCT 47																							
Date										Date																							
T O Strength 0 1 EM 136																																	
Date Started Training 18 SEPT 48																																	
Unit Commander WILLIAM J. CRIST, CAPT.																																	
T O		Actual Assignment																															
Authorization		PRESENT		NAME IN FULL																													
GRADE		MOS																															
1ST SGT		502		KRAMER, H. T.																													
1ST SGT		2017		BRANNON, G. H.																													
M SGT		2017		CREWS, E. J.																													
M SGT		2017		BOWEN, R. T.																													
SGT 1CL		824		MORRIS, H. C.																													
SGT 1CL		2017		PAULEY, T. B.																													
Articles Of War																																	
Citizenship																																	
Customs Of The Service																																	
Military Courtesy & Discipline																																	
Sex Hygiene																																	
Hygiene & Sanitation																																	
Defense Against Chemical Attack																																	
Defense Against Air & Mech Attack																																	
First Aid																																	
Care & Maint Of Equipment																																	
Interior Guard Duty																																	
Weapons Training																																	
Automotive Mechanics																																	
Bakery Technique																																	
Cooking																																	
Motor Vehicle Operation																																	
Utility Repairs																																	
Operation Of Ordn Equip																																	
Maint Of Ordn Equip																																	
Improvised Methods Of Opa																																	
Setting Up Equipment																																	
Map & Photograph Reading																																	

tain to his company personnel are available, the length of courses, and the planned frequency of classes. This training will supplement field training.

9. UNIT SCHOOLS

Schools for training the personnel of the mobile bakery company should be systematically conducted within the unit. Trained individuals should train others in accordance with a scheduled use of subject matter. Training progress charts (fig. 2) should be maintained covering the program hours allotted to each specialty taught. Training should be conducted in accordance with Department of the Army methods presented in FM 21-5 and TM 21-250.

Section II. UNIT TRAINING

10. ARMY TRAINING PROGRAMS

a. *Training Programs.* The mobile bakery company organized and equipped under the direction of the Quartermaster Corps, is trained under the following training programs:

- (1) *ATP 21-1.* ATP 21-1 provides the basic military training for the individual. The program is designed to be used either to convert the recruit from a civilian to an effective member of the armed forces or to provide refresher military training for individuals who have been in the service for some time.
- (2) *MTP 10-2.* MTP 10-2 provides a guide for unit training.

b. *Training Schedules.* The company commander will prepare training schedules as prescribed in FM 21-5. These schedules will use the Army mobilization training program as a guide and will be developed for the utilization of the local training facilities.

c. *Reference and Instructional Material.* The Army mobilization training programs contain adequate references to Department of the Army instructional material. However, new material is constantly appearing. To obtain the latest reference and training aids, it is necessary to consult SR 310-20-3, SR 310-20-4, SR 310-20-5, SR 310-20-6, and FM 21-8. All field and technical manuals and other Department of the Army publications pertinent to the training and operation of the bakery company should be collected in a company library and made available to all interested personnel. Pertinent manuals and regulations are issued to units when activated. If additional copies are required, they should be requested through normal publication supply channels.

d. *Instructor Guidance Program.* Officers, non-commissioned officers, and other instructors will be given appropriate instructor training throughout the entire training period by the training cadre. A school conducted by the cadre will be organized as soon as a company is activated, preferably before the trainees arrive. Here the personnel will be reviewed in their specialties and trained in the methods of instruction. In the school the company commander will set up definite chains of responsibility for job supervision. The school will continue throughout the training period and gradually evolve into periodic meetings

of the company commander, platoon leaders, and key noncommissioned officers.

e. Field Operations Training. Planning for field operations training is dependent upon local facilities. However, the training should be given under conditions that the unit will be expected to encounter in the field. Operational sections and platoon headquarters will operate under their own leaders. Battle conditions will be simulated and operations will be conducted night and day under a maximum load. Standing operating procedures for decontamination, insect and rodent control, destruction of equipment and supplies to prevent their falling into the hands of the enemy, and defense against air, chemical, mechanized, and ground attack will be constantly rehearsed. Proficiency in the technical operations of the company elements must be attained.

f. On-the-job Training. Bakery platoons can get valuable training by supplementing the output of fixed bakery facilities at installations. If such an assignment is made, baking should be done under the direction and supervision of the platoon leaders.

g. Points for Particular Emphasis. Experience in theaters of operations with similar bakery units operating alone has proved that the following points must be stressed if the bakery unit is to operate efficiently:

- (1) *Bivouac selection and development.* On some assignments a bakery platoon may bivouac in the same location for several weeks or months. In such a situation, the value of improving the semipermanent camp site by proper camp engineering cannot be overstressed. Proper camp engineering is one

of the most important factors contributing to the comfort, morale, health, and efficiency of the bakery unit in the field. Proper selection of sites, tent pitching, field expedients (showers, wash racks, box latrines), and good field housekeeping should be included in the training.

- (2) *Field sanitation and personal hygiene.* During the training period, field sanitation and personal hygiene must be constantly stressed. Particular emphasis must be placed upon storage, preparation and handling of food items, and the proper cleansing and disinfestation of equipment and containers coming in contact with the food.
- (3) *Security.* In areas subject to enemy observation and attack, proper security measures must be taken in bivouac and on the job. The principles discussed in paragraphs 52 and 53 must be thoroughly taught.
- (4) *Separate platoon operations.* A platoon must be trained to operate as a self-sustaining unit.
- (5) *Interchangeability of personnel.* Every man in the company should know his own job and that of at least one other man. In this way the unit can continue to operate effectively in spite of losses of personnel.
- (6) *Definite lines of responsibility.* Platoon leaders should carefully build up definite lines of responsibility within the platoon and be sure that these lines are followed on job supervision. This is particularly necessary

in maintenance operations. Strict adherence to the chain of command makes responsibility clear and dignifies the position of the noncommissioned officers.

- (7) *Time off.* In order to prevent any interruption in the normal operations, time off should be rotated through the command so that only a few men are free at one time, each man being free once every 10 days or 2 weeks. Where this system has been used, it has resulted not only in improved morale but also in conservation of clothing and equipment.

11. CADRE

The cadre of the mobile bakery company consists of 17 men (T/O&E 10-147). The cadre should be made up of men trained in bakery operational techniques, supply procedures, and the fundamentals of company administration and food service.

CHAPTER 3

ORGANIZATION AND EQUIPMENT

Section I. ORGANIZATION

12. SECTION

Each section represents a working shift. There are three sections in a platoon, thus three working shifts are provided. A section is composed of one section leader, who is a master baker, one assistant section leader who is also a master baker, six bakers, and one baker's apprentice.

13. PLATOON

The platoon is the basic element of the company since one set of baking equipment is provided to each platoon. The platoon consists of a platoon headquarters and three operating sections (shifts). The platoon headquarters is composed of 1 officer and 11 enlisted men and each of the sections is composed of 9 enlisted men (par. 12). Thus the aggregate for the platoon is 39. There are three platoons in the mobile bakery company.

14. COMPANY

The mobile bakery company is organized with the personnel authorized by T/O&E 10-147. It is composed of a company headquarters and 3 operating

platoons. The company headquarters (par. 26) is composed of the company commander and 24 enlisted men and each of 3 platoons is composed of 1 officer and 38 enlisted personnel (par. 13). Thus the aggregate for the company is 142 (fig. 3).

Section II. EQUIPMENT

15. SPECIALIZED ORGANIZATIONAL EQUIPMENT

The chief organizational equipment of the mobile bakery company is as follows:

a. *Mixing and Make-Up Machinery Trailer.* Each platoon of the mobile bakery company is provided with one mixing and make-up machinery trailer (figs. 4 and 5). The trailer is of the two-wheel, dual-tire, single-axle type. The trailer floor is approximately 11 feet long by 7 feet 4 inches wide. Since, however, the trailer's drawbar extends 4 feet 5 inches forward from the front of the trailer, the over-all length of the trailer, at floor level, is approximately 16 feet 5 inches. The height of the trailer, from the ground to the top of the monorail superstructure, is approximately 9 feet 3 inches. The entire unit weighs approximately 5½ tons and is designed to be towed by a 4-ton 6 x 6 cargo truck.

- (1) *Mixer and water-tempering tank.* The mixer is mounted at the rear of the trailer (the end opposite the drawbar end). It is a tilting-bowl type of all-metal construction with a capacity of approximately 492 pounds of dough ingredients. The mixer has four agitator arms operated by a 7½-horsepower,

QUARTERMASTER BAKERY COMPANY, MOBILE

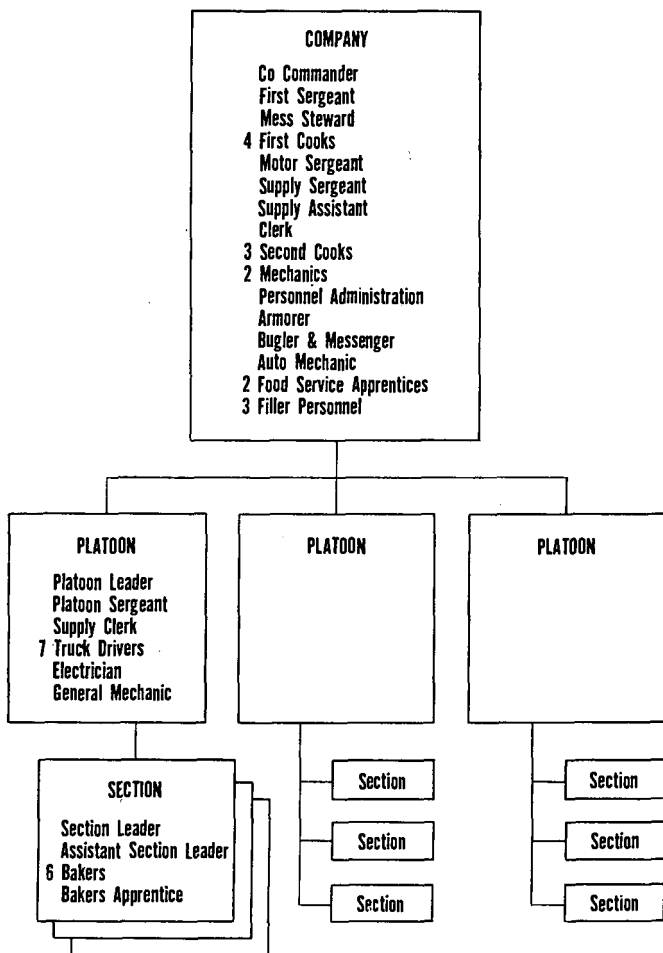


Figure 3. Organizational chart.

220-volt, 3-phase, 60-cycle electric motor. A thermometer mounted on the front of the mixing bowl indicates the temperature of the ingredients during the mixing operation. Above the mixer, to the left of the operator, is a 30-gallon tank for tempering ingredient water. This tank has a temperature indicator and a gage for measuring in pounds the outflow of ingredient water from the tank into the mixing bowl through a swinging outlet and hand valve.

- (2) *Divider*. The divider, which is mounted toward the front of the trailer next to the mixer, is a single-pocket type, capable of dividing approximately 20 loaves per minute. It is operated by a $1\frac{1}{2}$ -horsepower electric motor. It has a conveyor belt that takes the dough piece as it falls from the divider pocket and carries it to the molder.
- (3) *Molder*. The molder is mounted at the very front or drawbar end of the trailer, in line with the mixer and the divider. Of all-metal construction, it is equipped with a canvas conveyor belt and operated by a $1\frac{1}{2}$ -horsepower electric motor. The speed of the molder is synchronized with that of the divider. The molder has two sets of rollers for flattening the dough piece, a curling screen for curling the flattened dough, and a pressure board for molding the curled dough piece into a compact, properly-shaped loaf.
- (4) *Monorail and dough troughs*. The monorail is a continuous steel track built as a super-

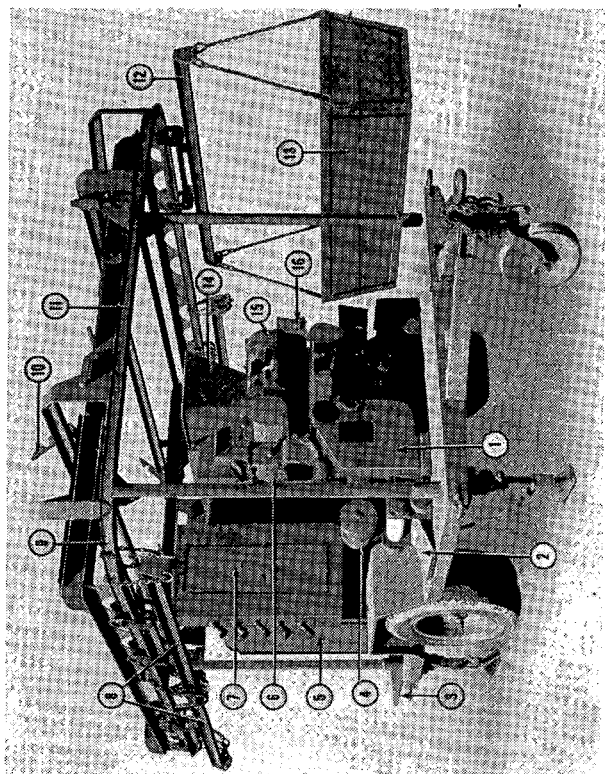


Figure 4. *Mixing and make-up machinery trailer (front view).*

- ① Molder.
- ② Molder discharge.
- ③ Work platform.
- ④ Molder motor.
- ⑤ Branch circuit receptacles.
- ⑥ Flour duster for molder head rollers.
- ⑦ Power control panel.
- ⑧ Dough trough carrier.
- ⑨ Monorail.
- ⑩ Lock for securing retracted side rail sections in transit.
- ⑪ Hinged end rail section.
- ⑫ Dough trough carrier.
- ⑬ Dough trough.
- ⑭ Divider hopper.
- ⑮ Divider cylinder and piston.
- ⑯ Flour duster for divider conveyor belt.

Figure 4—Continued.

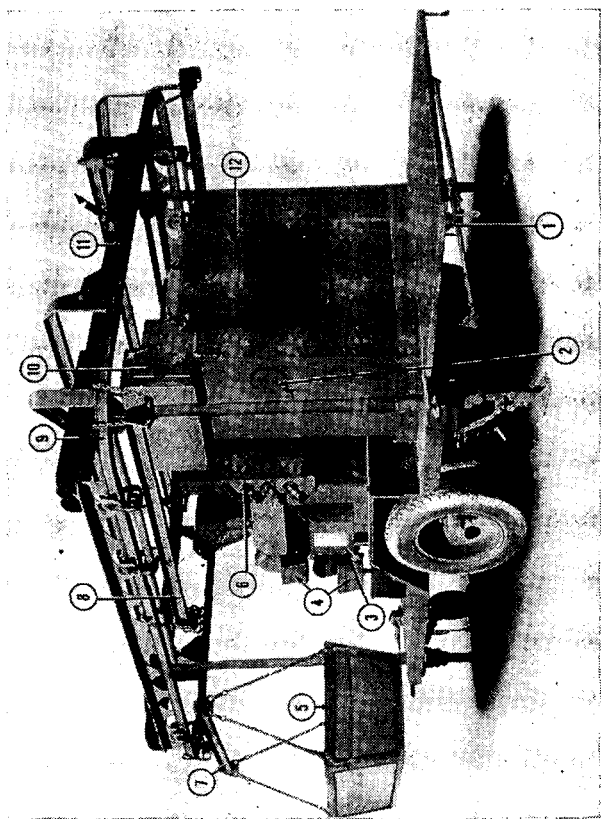


Figure 5. Mixing and make-up machinery trailer (rear view).

- ① Work platform.
- ② Handwheel.
- ③ Divider oil pump and container.
- ④ Flour dusters.
- ⑤ Dough trough.
- ⑥ Light control panel.
- ⑦ Dough trough carrier.
- ⑧ Dough trough carrier.
- ⑨ Monorail.
- ⑩ Water-tempering tank.
- ⑪ Hinged end section of monorail.
- ⑫ Mixing bowl.

Figure 5—Continued.

structure on the trailer. The monorail supports carriers, from which are suspended the dough troughs. The framework of the monorail is supported by upright tubular steel posts. The dough troughs, made of stainless steel and completely insulated, are supported by chains and hooks connected to the carriers. The carriers have swivel-type wheels that run on the monorail.

- (5) *Work platform.* Hinged to the back of the trailer is a work platform approximately 6 by 4 feet for the mixing machine operators. When the trailer is in transit, this platform folds and latches against the mixing machine.
- (6) *Power control panel.* Mounted back of the mixer and to the right of the mixing machine operator is a power control panel. This panel is the distributing point for the main electrical output of the mobile generator units that feed the major items using 220-volt, 3-phase, 60-cycle current. Current from the generators is distributed at the power control panel by means of branch circuits wired to socket-type receptacles. These receptacles, mounted along the edge of the panel, facilitate the installation of the electrical connections necessary for the operation of the proofing and water trailer and the two oven trailers (b and c below).
- (7) *Light control panel.* The trailer has a light control panel for distribution of 110-volt, single-phase, 60-cycle current and 220-volt, single-phase, 60-cycle current. The light

control panel is mounted to the rear of the water - tempering tank. This panel is equipped with socket-type receptacles which facilitate the installation of electric lights above the trailer and around the baking area.

b. *Proofing and Water Trailer.* Each platoon of the mobile bakery company is provided with a proofing and water trailer (figs. 6 and 7). The trailer is of the two-wheel, single-tire, single-axle type. The trailer body is 12 feet 6 inches long by 7 feet 6 inches wide, with the drawbar extending beyond the front of the trailer's body a distance of 44 inches. The trailer is 7 feet 6 inches high and weighs approximately 3 tons. The trailer is designed to be towed by a 2½-ton 6 x 6 cargo truck.

- (1) *Proofing cabinet.* The proofing cabinet, located on the upper deck of the trailer, is air-conditioned. It is provided with chain-type conveyors and has sliding doors on both sides to facilitate loading and unloading. The proper proofing temperature is maintained by a thermostatically controlled heating unit, and the proper moisture content of the air is controlled by a spray-and-scrubber-type humidifier. Complete air circulation is maintained by a blower and duct system. The cabinet has a capacity of 72 pans, each pan holding six 2-pound loaves, or a total capacity sufficient to charge the 2 ovens.

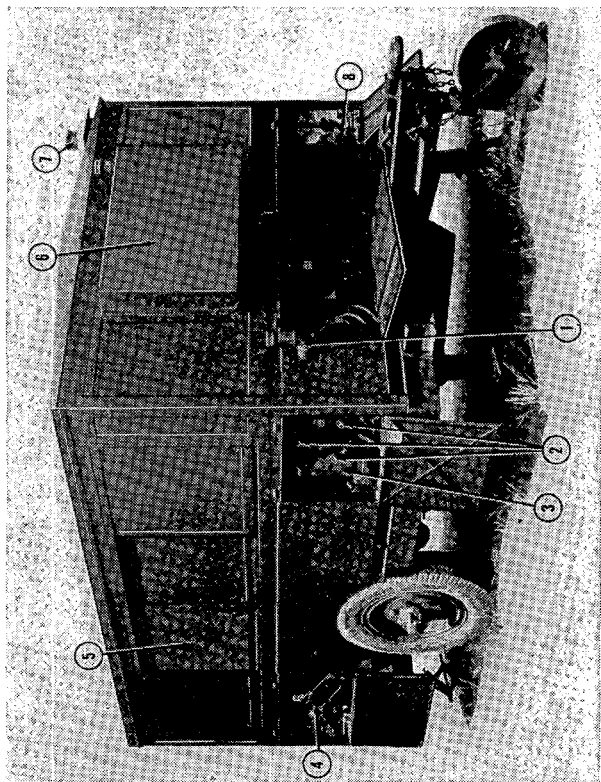


Figure 6. Proofing and water trailer (front view).

- ① Filler pipe to cold-water storage tank.
- ② Hot, cold, and hot-and-cold mix taps.
- ③ Water pump.
- ④ Blower.
- ⑤ Proofing cabinet.
- ⑥ Fuel tank.
- ⑦ Stack for hot-water heater burners.
- ⑧ Pot-type oil burners with blowers.

Figure 6—Continued.

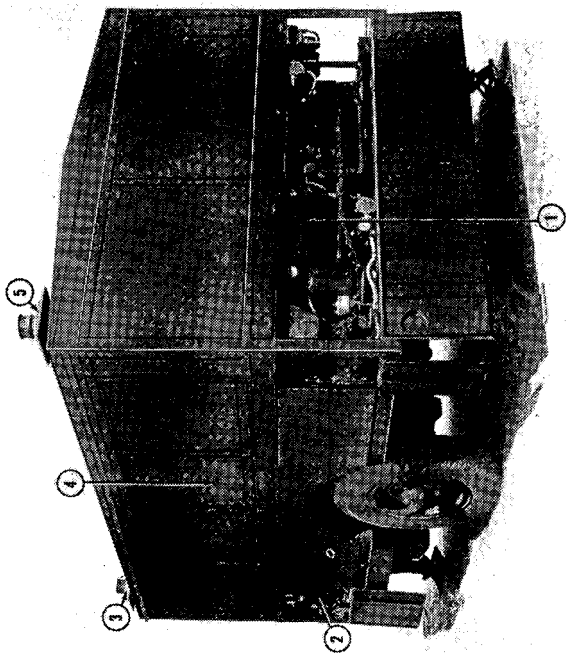


Figure 7. Proofing and water trailer (rear view).

- ① Air-conditioning unit.
- ② Pot-type oil burners with blowers.
- ③ Stack for hot-water heater burners.
- ④ Proofing cabinet.
- ⑤ Stack for proofing cabinet heater burner.

Figure 7—Continued.

- (2) *Cold-water storage tank.* The cold-water storage tank, located beneath the proofing cabinet, has a capacity of approximately 300 gallons. An electrically driven pump is provided to force the water from the storage tank to the water-tempering tank of the mixer. The water stored in this tank is used for ingredient mixing.
- (3) *Hot-water storage tank.* The hot-water tank, located beneath the proofing cabinet next to the cold-water storage tank, has a capacity of 30 gallons. The hot water stored in this tank is used for ingredient mixing and is forced by an electrically driven pump to the water-tempering tank of the mixer. The water is heated by means of a horizontal pot-type burner, using either gasoline or light fuel oil.

Note. Since to date (July 1950) the proofing and water trailer is still in the development stage, some M-1945 mobile bakery units are without this trailer. Those units operating without a proofing and water trailer will be provided with two portable insulated proofing cabinets 64 inches wide by 28 inches deep by 70 inches high. These two proofing cabinets have the same bakepan capacity as one proofing and water trailer. The cabinets are provided with humidifying units using electric strip heaters. When the proofing and water trailer is not available for hot water storage, the ingredient water will be heated outside the bakery tent by use of immersion water heaters or any practical method.

c. Oven Trailer. Each platoon of the mobile bakery company is provided with two oven trailers iden-

tical in size and design (figs. 8 and 9). Each of these consists of a two-chambered oven mounted on a two-wheel, dual-tire, single-axle trailer. The over-all length of the trailer is 16 feet, 8 inches. The width of the trailer body is 7 feet 6 inches. Its height (less stack) is approximately 6 feet 11 inches. The trailer weighs approximately 3 tons and is designed to be towed by a 2½-ton 6 x 6 cargo truck.

- (1) *Oven chambers.* Mounted on the oven trailer chassis is a single oven unit containing two chambers. Each oven chamber is illuminated by an electric light and provided with two endless conveyor chains for loading and unloading. Each chain is operated by a separate hand crank. The capacity of each chamber is 18 bread pans, each pan holding six 2-pound loaves.
- (2) *Heating system.* The heating system of the oven consists of a burner, motor and blower, radiator tubes, connecting ducts or headers, and a stack. The temperature is controlled by the sensitized bulb of an indicating thermostat. The oven is fired by a gravity-feed, horizontal pot-type burner. The burner will burn either gasoline or light fuel oil. The blower is operated by a 1½-horsepower electric motor. Both the burner and the blower motor are detachable from the oven and are carried in the oven trailer in an enclosed storage cabinet.

Note. In the event of failure of normal fuel supply or the loss of the oven units M-1942 portable ovens should be used, or if these are not available, improvised methods of baking

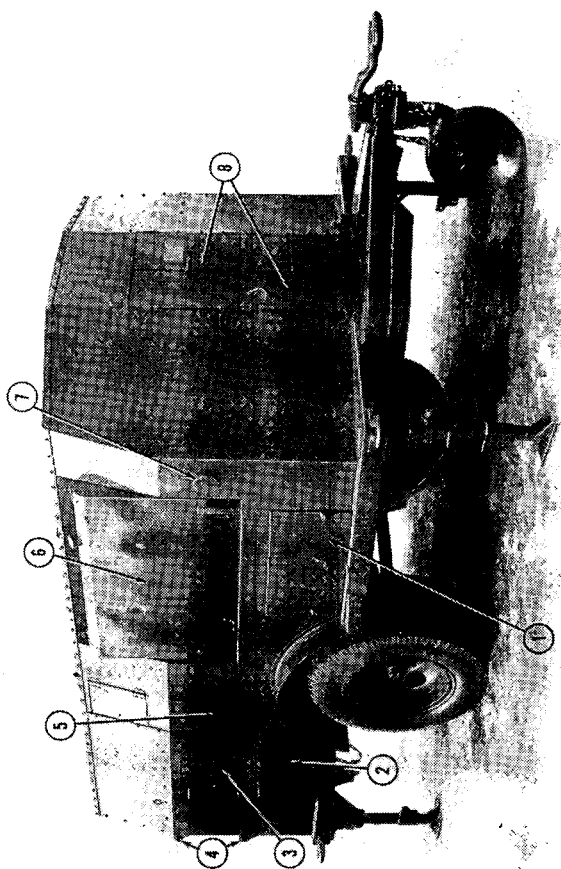


Figure 8. Oven trailer (front view).

- ① Storage compartment.
- ② Location of oil burner.
- ③ Temperature control panel.
- ④ Sockets for oven conveyor chain hand cranks.
- ⑤ Oven-light access door.
- ⑥ Fuel tank.
- ⑦ Fuel gage.
- ⑧ Pressure relief doors enclosing oven safety-blowout plates.

Figure 8—Continued.

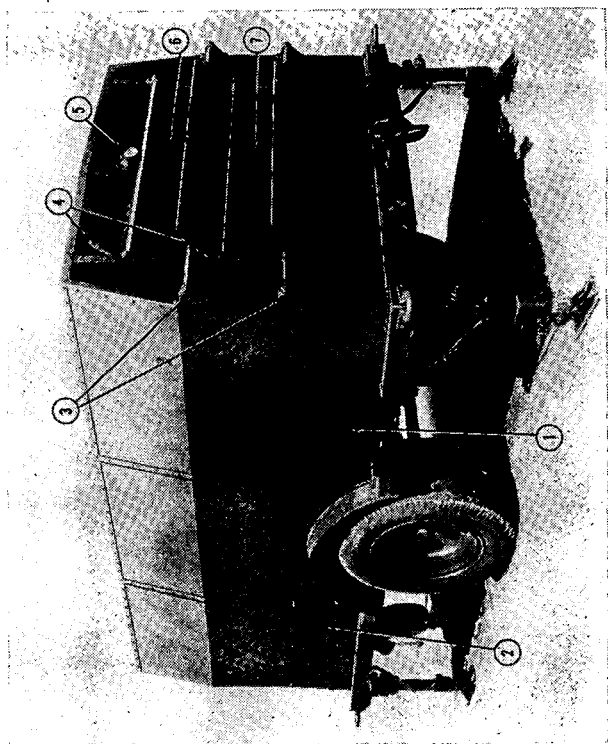


Figure 9. Open trailer (rear view).

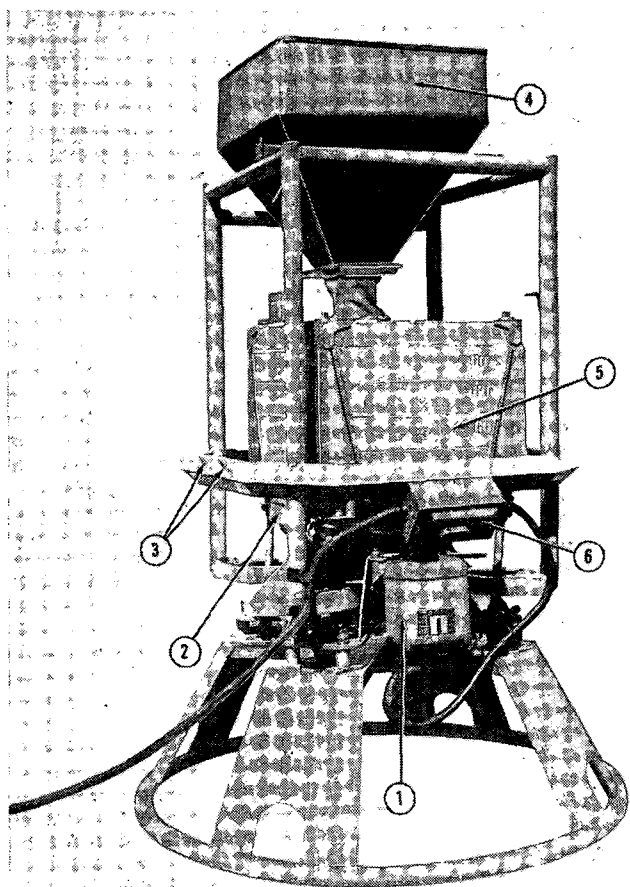
- ① Location of blower motor.
- ② Storage compartment.
- ③ Sockets for oven conveyor chain hand cranks.
- ④ Oven door handles.
- ⑤ Oven temperature indicator.
- ⑥ Upper deck of oven.
- ⑦ Lower deck of oven.

Figure 9—Continued.

will be necessary. TM 10-400 describes a number of field baking improvisations, used under emergency conditions when standard equipment is lacking.

d. Auxiliary Equipment. The auxiliary equipment provided for the mobile bakery company is as follows:

- (1) *Flour sifter.* The flour sifter (fig. 10) consists of a hopper, a sieve box, and an electric motor, all mounted in a welded magnesium frame. The sieve box is mounted on an eccentric that gives the box a vibrating motion. The eccentric is operated by a standard fractional-horsepower motor. The sifter is 65 inches high and occupies a space approximately 36 by 36 inches. It has a sifting capacity of 60 pounds per minute. Its approximate weight is 190 pounds.
- (2) *Water-cooling unit.* The portable mechanical water-cooling unit provides cooled ingredient water for the mobile field bakery. The unit consists of a refrigeration condensing unit and a 25-gallon storage tank equipped with a centrifugal-type pump operated by a $\frac{1}{2}$ -horsepower, single-phase, 60-cycle, 208-volt motor. One water-cooling unit is provided per platoon.
- (3) *Generator trailers.* Two generator trailers, each carrying a 25-kilowatt generating set with voltage regulator, are provided for each platoon. The gasoline-engine-driven generators supply both motive and lighting power for the bakery unit and are used



- | | |
|--------------------|-------------------|
| ① Sifter motor. | ④ Feed-in hopper. |
| ② Flour discharge. | ⑤ Sieve box. |
| ③ Flour bag hooks. | ⑥ Switch box. |

Figure 10. Portable flour sifter.

alternately to operate the bakery, with one kept as a stand-by at all times.

- (4) *Trucks and trailers.* Vehicles provided for the company headquarters and for each of the three mobile platoons are as follows:

(a) *Company headquarters.*

- 1 Trailer, cargo, 2-wheel, 1-ton.
- 1 Trailer, water-tank, 250-gallon, 2-wheel, 1-ton.
- 1 Truck, utility, 4 x 4, $\frac{1}{4}$ -ton, M38.
- 3 Truck, cargo, 6 x 6, $2\frac{1}{2}$ -ton, w/winch.

(b) *Platoon.*

- 1 Trailer, water-tank, 250-gallon, 2-wheel, 1-ton.
- 6 Truck, cargo, 6 x 6, $2\frac{1}{2}$ -ton, w/winch.
- 1 Truck, cargo, 6 x 6, 4-ton, 4-dual-tire, short wheel base, w/winch.
- 1 Bakery unit, mobile, M-1945, consisting of—
 - 1 Mixing and make-up machinery trailer.
 - 2 Generator trailer.
 - 2 Oven trailer.
 - 1 Proofing and water trailer (when available).

- (5) *Water pump.* One water pump is provided for each mobile bakery platoon. The pump is self-priming and is driven by a gasoline engine. Both pump and engine are mounted on a tubular steel frame. The pump is compact in design (15 by 15 by 25 inches) and is equipped with four 25-foot sections of 1-inch rubber hose.

- (6) *Additional equipment.* Additional equipment, such as skate-wheel conveyors, scales, racks, tents, and tables, is provided for each of the mobile bakery platoons (see T/O&E 10-147).

16. PROVISION OF EQUIPMENT

The allowances of equipment for the mobile bakery company are listed in T/O&E 10-147. The principal items of operational equipment, specifically designed for the mobile bakery company, are apportioned as follows:

a. Platoon.

- 1 Trailer, machinery, mixing and make-up.
- 1 Trailer, proofing and water, *or*
- 2 Cabinet, proofing, portable.
- 2 Trailer, oven.
- 40 Rack, bread, folding.
- 1 Sifter, flour, portable.
- 1 Cooler, water, refrigerated.
- 3 Table, molding.

b. Company. Since a company consists of three platoons, a company's equipment is three times that of a platoon, as listed in *a* above.

Section III. MAINTENANCE

17. GENERAL

To insure mechanical efficiency it is necessary that the organization machinery and equipment of the mobile bakery company be systematically inspected at intervals each day so that defects may be discov-

ered and corrected before they result in serious damage. Organizational repairs and maintenance of the bakery machinery and equipment are required of the personnel within the company; field and base repairs and maintenance may be referred to quartermaster mobile or fixed reclamation and maintenance units.

18. RESPONSIBILITY FOR MAINTENANCE

a. General.

- (1) Each member of the mobile bakery company has a definite maintenance responsibility. It is the duty of all officers to inspect equipment under their jurisdiction in order to verify the functioning of maintenance and operating personnel and to insure that all personnel are complying with prescribed procedures and regulations.
- (2) Continued effectiveness of operations depends upon proper preventive maintenance. The purpose of preventive maintenance is to detect and correct minor troubles before they develop into major troubles. This necessitates servicing the equipment to keep it in operating condition. Maintenance services performed by all operators on the mobile bakery unit are discussed in pertinent manufacturers' manuals and in appropriate technical manuals listed in appendix XI.

b. Commander. It is the responsibility of the company commander that instructions and procedures for maintenance operations, which are published in

current technical manuals, lubrication orders, and other pertinent publications, are strictly complied with by all personnel under his control and that authorized lubricants, parts, tools, and supplies are made available at all times for proper performance of maintenance operations. It is also his responsibility that all individuals within his command are trained in proper preventive maintenance of all equipment and that sufficient time is allotted for proper application.

Note. The platoon leaders are likewise responsible for the foregoing, under authority delegated by the commanding officer.

19. MAINTENANCE OF MOBILE BAKERY EQUIPMENT

a. Operator Maintenance. The chief responsibility for preventive maintenance of mobile bakery equipment lies with the operator. Only through him can the mechanic know what difficulties a piece of equipment is causing. As a matter of regular routine each operator is required to perform the daily services prescribed in the technical manual accompanying the equipment. Faithful performance of these services will do much to prolong the life of the equipment and to eliminate major repairs and overhauls.

Note. Organizational maintenance of the trailers on which the mobile bakery machinery is mounted is the responsibility of the drivers of the towing vehicles (first echelon maintenance) and the automobile mechanics (second echelon maintenance).

b. Organizational Maintenance. Each platoon is provided a general mechanic and an electrician who perform organizational maintenance on the bakery

equipment. When necessary, assistance may be provided by the use of automobile mechanics in the company. Since the same equipment will be used for a number of baking shifts, time must be provided for the mechanics to work on the bakery equipment even if this means some loss in production. Sufficient tools and an initial issue of spare parts are provided to do the work prescribed. References on the maintenance of the bakery equipment are listed in appendix XI.

c. Higher Echelon Maintenance. Field maintenance is performed by the quartermaster reclamation and maintenance company, semimobile. Depot maintenance is performed by a quartermaster maintenance depot.

Note. Higher echelon maintenance of the trailers on which the mobile bakery machinery is mounted is performed by supporting ordnance organizations. Maintenance is performed in accordance with the appropriate technical manuals (app. XI).

20. MAINTENANCE OF INDIVIDUAL AND ORGANIZATION EQUIPMENT

a. Vehicles. The vehicles assigned to the mobile bakery company will be maintained by the drivers and the company automobile mechanics, who will follow procedures prescribed in TM 37-2810 and the proper vehicle technical manuals.

b. Clothing and Equipment. Clothing and equipment will be maintained as prescribed in AR 615-40 and appropriate Department of the Army publications. Regular inspections by officers and noncommissioned officers will insure that the regulations are being followed.

c. *Other Organizational Equipment.* Other organizational equipment will be maintained by the user and company mechanics as prescribed by TM 38-650, appropriate technical manuals, and related publications. The policies prescribed by higher authority will be followed.

21. MAINTENANCE RECORDS

The maintenance records prescribed by AR 700-105 will be kept for the mobile bakery company. In each case where maintenance record forms have not been prescribed covering items of equipment or machinery, improvised records should be kept to insure that scheduled maintenance services are performed regularly. Improvised maintenance record forms may be developed by a study of WD AGO Form 460, as shown in TM 37-2810, such forms to be utilized in keeping weekly, monthly, and semiannual preventive maintenance service records. Special reports may be required by higher authority, depending upon the local situation.

22. SUPPLY OF SPARE PARTS AND TOOLS

a. Authorized allowances of spare parts and tools for the mobile bakery company are issued upon activation of the company. Company supply personnel will maintain the authorized stock level by requisition from or exchange with the designated supplying organization.

b. Effectiveness of spare parts supply is dependent largely upon careful study of needs by maintenance personnel and upon preparation of clear and accurate

requisitions to the supply agency. When appropriate, all spare parts requisitions should contain the make, model, and serial or series number of the equipment, together with the Quartermaster Corps or vendor's stock number or both and the approved nomenclature of all items required. When technical manuals are used to obtain spare parts numbers and nomenclature, the title and date of such publications should be stated on the face of the requisition as a guide for the supply agency in determining the exact spare parts desired.

23. SHUTDOWN, STORAGE, OR SHIPMENT

a. Preparation for Extended Shutdown or Storage. When the mobile bakery is to be shut down for an extended period or is to be placed in storage, the equipment must be properly prepared according to current Department of the Army procedures. The water and fuel tanks and lines must be carefully drained, power cables disconnected and coiled, detachable items, such as oven burner and blower, removed and placed in proper storage compartment, and the equipment covered to protect it from moisture and dust. Machinery and equipment subject to corrosion must be treated with approved rust-preventive materials unless such treatment will be harmful to the item itself (TM 10-1699A and TM 10-1699C).

b. Preparation of Equipment for Oversea Shipment. Mobile bakery equipment to be shipped overseas will be prepared and processed in accordance with current directives. Port commanders are responsible that only properly packed and marked equipment is

loaded for shipment. The company commander will direct the preparation of the equipment for shipment, calling upon service units for assistance. In packaging and transporting the equipment, special care will be exercised to guard against pilferage.

CHAPTER 4

DUTIES OF PERSONNEL

Section I. GENERAL DESCRIPTION

24. Section

a. Section Leader and Assistant Section Leader. The section leader and the assistant section leader of the mobile bakery company are the noncommissioned officers who direct the bakery operations of the section. As they are responsible for baking and for the proper preventive maintenance of the mobile bakery machinery and equipment during their bake shift, they must be trained bakers. They should be able to work with, direct, and supervise the section. They must have a thorough knowledge of bakery bread formulas and a thorough acquaintance with the M-1945 mobile bakery unit.

b. Bakers. The bakers' duties are to produce fresh bread in the field. The bakers operate the mobile bakery machinery and perform the necessary manual labor to complete the baking process. They perform the required operators' maintenance inspections and assist the bakery mechanic in performing organizational maintenance on the bakery machinery. They must be able to perform any of the mechanical operations by hand in case of mechanical failure.

25. PLATOON HEADQUARTERS

a. Platoon Leaders.

- (1) *General.* When platoons of the mobile bakery company are operating separately, the three platoon leaders have the responsibility for the training and discipline of the personnel in both technical and tactical phases of platoon operations. Platoon leaders, following the general instructions and training schedules of the company commander, should train their platoons with a dual purpose in mind. First, they are responsible to the company commander for the development of the platoon as a part of the company team. Second, they must make the unit self-reliant, since the platoon in some instances may be detached from the company to operate as a separate unit. In such a situation the platoon leaders would be responsible for the administration, transportation, supply, and the security of the unit.
- (2) *Company duties.* When the company operates as a unit, platoon leaders are available for additional duties which may be assigned by the company commander. Such duties include assignments as mess officer, supply officer, gas officer, security officer, company censor, and any other assignments demanded by the situation. In delegating this authority to platoon leaders the company commander retains responsibility for the proper performance of these duties.

- (3) *Specialized duties.* The platoon leaders must have a thorough knowledge of practical baking. They must understand bakery accounting, production schedules, power and transportation problems, water purification and treatment, and insect and rodent control. They must arrange for the care, maintenance, and repair of the mobile bakery equipment and machinery and direct the baking operations in a manner that will insure the proper quality and the desired amount of bread.

b. Platoon Sergeant. The platoon or master sergeant in each platoon, who may be designated the platoon's chief baker, is the noncommissioned assistant to the platoon leader. He is the direct supervisor of all bakery operations, assisting the platoon leader in the coordination and control of operations. He works closely with the section leaders, helping them to solve field baking problems. Assisted by the platoon bakery mechanic and the supply clerk, he coordinates the operation, maintenance, and supply of the mobile bakery unit under his supervision.

c. Supply clerk. The supply clerk assists both the chief baker and the operating supply corporal. He maintains records of bakery operations, supplies used, units served, and such other operating and supply records as may be required.

d. Truck Drivers. The truck drivers drive the cargo trucks assigned to the platoon and perform operator maintenance upon them. The truck drivers will pick up operating supplies and deliver bread.

e. *General Mechanic and Electrician.* The general mechanic and electrician are responsible for the proper maintenance of the mobile bakery machinery and equipment. They will be assisted by the bakers and, when necessary, by the company automotive mechanics.

26. COMPANY HEADQUARTERS

a. *Company Commander.* The company commander is both the administrator of the mobile bakery company and the director of its operations. In addition to military qualifications, he must have the ability to supervise the bread-baking operations. He alone is responsible for the training of the company, for its efficient administration, and for the maintenance of discipline. His administrative duties as company commander are given in AR 245-5 and TM 12-250. His duties as director of the bakery operations of the company are the following:

- (1) Instructing and supervising company personnel in mobile bakery operation and maintenance.
- (2) Maintaining adequate levels of operating supplies.
- (3) Supervising the keeping of records and reports.
- (4) Maintaining adequate liaison with higher headquarters and with units served in order to secure maximum utilization of the company's facilities.

b. *Administrative and Housekeeping Personnel.*

- (1) The duties of the administrative and housekeeping personnel in company headquarters

are those commonly understood for enlisted personnel under their designated military occupational specialties as outlined in TM 12-427 and further detailed in TM 10-205, TM 12-250, and TM 12-255.

- (2) The mess steward, the cooks, and the food service apprentices operate the company mess under the direction of the mess officer. When platoons are operating separately, these men may be apportioned to the separate platoons to provide mess facilities unless the platoons are authorized to mess with another organization.

c. Supply Sergeant. The supply sergeant in company headquarters is responsible to the company commander for the maintenance of the authorized level of supplies. He must anticipate items for future needs and requisition, receive, store, and issue these items. He should maintain a running inventory of supplies in order to prepare periodic operational reports. He is assisted in the performance of these duties by an assistant supply sergeant and the supply clerks of the operating platoons.

Section II. SETTING UP AND TAKING DOWN EQUIPMENT

27. SETTING-UP OPERATIONS

a. General.

- (1) Ordinarily, the mobile bakery company should require only 4 hours or less after arrival at bivouac to pitch camp and set up equipment. When the trucks are halted in

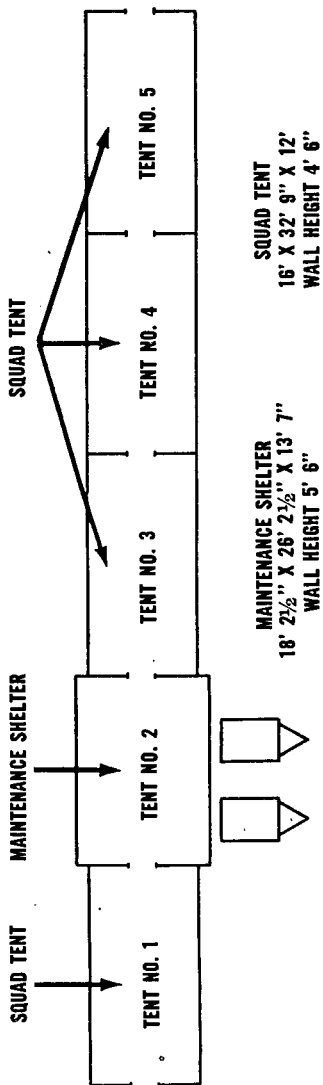


Figure 11. Plan for pitching mobile bakery tents end to end.

the vicinity of the site assigned, the officers in charge, assisted by the first sergeant and the platoon sergeants, should measure off distances for the stakes of the tentage and then direct the trucks to convenient unloading positions. The equipment should then be placed as accurately as possible in accordance with established installation plans (figs. 11 and 12).

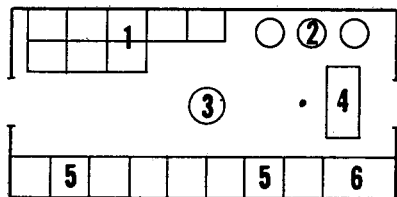
- (2) Under certain circumstances, substitute installations may be utilized, such as the modified assembly tent (fig. 13), and certain types of arctic shelter (fig. 14).
- (3) Terrain may not always permit pitching the tents in accordance with the plan shown in figure 11. In such event, tent 1 may be placed as near as practicable to tent 2. Furthermore, conditions may require that tents 4 and 5 be spaced at varying distances from the others. A lay-out of tent sites which has been used successfully under difficult terrain conditions utilizes a tent fly, adjacent to tent 2, to shelter the proofing and baking units normally housed in tent 3. This plan involves moving tent 3 elsewhere but has the advantage of freeing tent 3 for additional cooling and storage space for the finished bread product. It must be borne in mind, however, that the mixing and make-up machinery trailer and the proofing and baking units must always be close together.

b. Mixing and Make-Up Equipment. To commence baking operations with the least possible de-

lay, place the mixing and make-up machinery trailer, equipment, and supplies in position first.

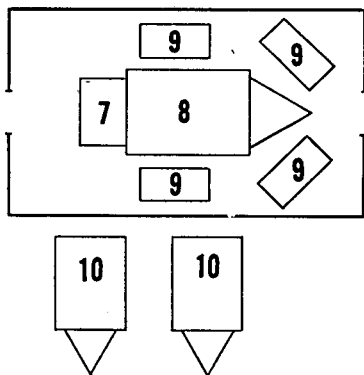
- (1) *Mixing and make-up machinery trailer.* Maneuver the mixing and make-up machinery trailer into tent 2 (the first tent to be erected) before pitching any of the remaining tents. Station the trailer with the mixing machine end adjacent to the area to be occupied by the ingredients tent (tent 1) (figs. 11 and 12).
- (2) *Ingredients.* Place the ingredients, supplies, sifter, and scales in tent 1 (the second tent to be erected). Stack the ingredients on pallets or dunnage in accordance with layout shown in figure 12.
- (3) *Generator trailers.* Tow into position the two generator trailers, placing them outside tent 2 on the side nearest the power control panel of the mixing and make-up machinery trailer, or one on each side of tent 2 as close to machinery trailer as practicable.
- (4) *Proofing and water trailer.* Station the proofing and water trailer in tent 3, as shown in figure 12, or under the tent fly, as described in a(3) above. The right hand side of the proofing and water trailer should be toward tent 2 so that the trailer's hot and cold water taps may be as near the mixing and make-up machinery trailer as possible.

Note 1. When the proofing and water trailer is not available, set up in this area two portable insulated proofing cabinets and connect to proper receptacles in the lighting panel.



SQUAD TENT

TENT NO. 1



MAINTENANCE SHELTER

TENT NO. 2

LEGEND

- | | |
|------------------------------------|---------------------------------|
| (1) Supplies on Dunnage or Skids | (9) Dough Trough |
| (2) Water | (10) Generators |
| (3) Sifter | (11) Proofing Cabinets |
| (4) Table | (12) Proofing and Water Trailer |
| (5) Supplies | (13) Oven Trailer |
| (6) Scales | (14) Conveyors |
| (7) Work Platform | (15) Bread Racks |
| (8) Mixing and Make-Up Trailer | |

Figure 12. Lay-out for mobile bakery equipment within each tent.

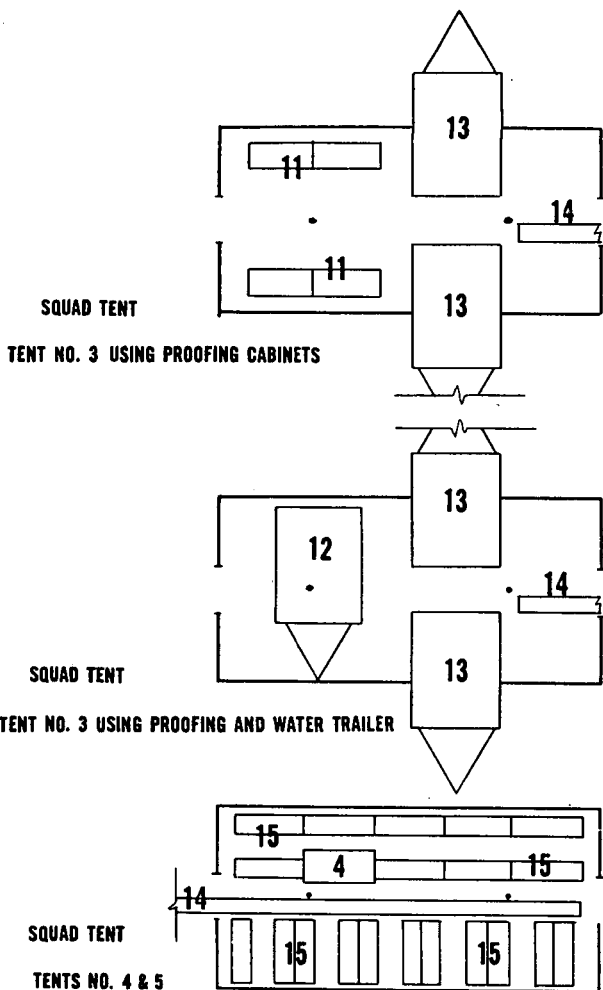


Figure 12—Continued.

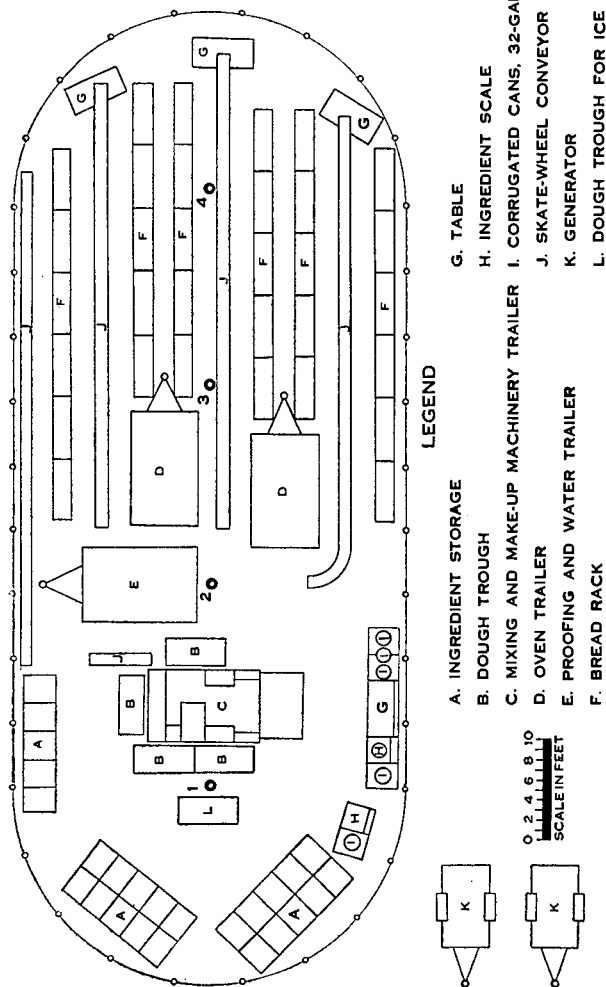


Figure 13. Plan for housing mobile bakery equipment in assembly tent with extra center section

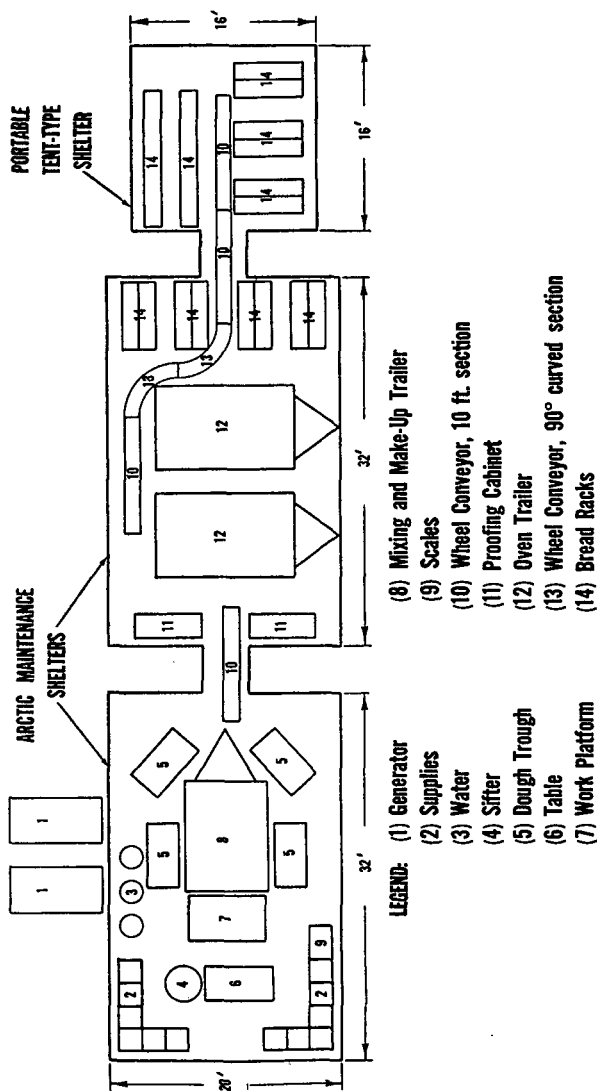


Figure 14. Plan for housing mobile bakery equipment in two Arctic maintenance shelters and one sectional tent-type shelter.

Note 2. When the proofing and water trailer is in position in tent 3, as shown in figure 12, it will be necessary to make special provision for one of the tent's center poles. To accomplish this, use a tent pole section 4 feet 9 inches long on top of the trailer. Place a block or board approximately 4 inches thick under tent pole section to secure height needed to reach the ridge pole and to prevent damage to the trailer roof.

(5) *Miscellaneous equipment.*

- (a) *Work platform.* Lower into position the work platform for the mixing machine, or when the work platform is detachable, place it on the horses provided for that purpose.
- (b) *Ingredient table.* Set up the ingredient table in tent 1 as close as practicable to the work platform. This will place the ingredient table at the end of tent 1 nearest to tent 2.
- (c) *Ingredient cans.* Place the ingredient storage cans (three corrugated, galvanized, 32-gallon cans with covers) on pallets or dunnage along the back wall of tent 1 as shown in figure 12.
- (d) *Scales.*
 - 1. *Platform scales.* Place the platform scales on pallets or dunnage along the front wall of tent 1.
 - 2. *Scoop scales.* Place the 10-pound scoop scales on the ingredient weighing table in tent 1.
 - 3. *Over-and-under scales.* If the over-and-under scales have not been previously

mounted, place them at the molder end of the mixing and make-up machinery trailer in tent 2 in a position that will facilitate check weighing of the dough pieces, as required, when they drop from the divider pocket.

c. Other Equipment.

- (1) *Oven trailers.* Station men at the front of the oven tent 3 to hold up the canvas while two oven trailers are being towed into position. Place the oven trailers so they extend only halfway into the tent (fig. 12). The oven doors will face the interior of the tent while the oven stacks, on opposite end of the trailer, lead the burner fumes outdoors. After the oven trailers have been towed into position, readjust and tighten tent eave lines. Drape the canvas walls neatly over the oven tops. The ovens are sufficiently insulated to eliminate the danger of burning or scorching the canvas wall.
- (2) *Conveyors.* Set up the conveyor line for carrying the pans of bread from the ovens to the bread storage racks, beginning at a point near the ovens in tent 3. Extend the conveyor line down the center of tents 4 and 5. Adjust the tripod supports to give the conveyor a down-grade slope from the ovens to the bread racks and pan-greasing tables in tents 4 and 5.

d. Assignment of Numbers to Platoon Personnel.
To facilitate setting-up operations, the men normally attached to each section of each platoon, assisted by

the platoon electrician and the general mechanic, will be assigned the following numbers:

(1) *First section.*

- (a) The assistant section leader will be assigned No. 1.
- (b) The bakers will be assigned Nos. 2, 3, 4, 5, 6, and 7.
- (c) The bakers' apprentice will be assigned No. 8.
- (d) The section leader will not be numbered.

Note. The electrician and the mechanic, common to all three teams, will not be numbered.

(2) *Second section.* Same as first section.

(3) *Third section.* Same as first section.

e. Numbering and Maneuvering Trucks. The platoon's seven trucks will follow the platoon loading and convoy serial plans given in paragraph 56. The trucks will be given numbers in the sequence shown in the platoon convoy serial plan. Trucks 1, 2, 3, and 4 will maneuver the trailers which they are towing into operating position as indicated in figure 12. Trucks 5 and 6 will maneuver the generator trailers into operating position outside Tent 2. Truck 7 will maneuver water trailer into operating position as indicated by the platoon sergeant. When the various trailers have been unhooked from their respective trucks and the trucks have moved clear, the trailers will be maneuvered into line by the platoon personnel.

- (1) First and second sections will aline the mixing and make-up machinery trailer.
- (2) Third section will aline the proofing and water trailer and both oven trailers.

f. Pitching Tents. Tents 2 and 3 (fig. 12) will be pitched over the bakery operations trailers. Tents 1, 4, and 5 will be pitched in the normal manner.

Note. As soon as the tents are pitched, the tables, which are carried in truck 5 with the tentage, will be placed in operating position.

g. Steps Taken by First Section.

- (1) Nos. 1, 2, 3, and 4 will remove the canvas covers from the mixing and make-up machinery trailer and lower the work platform to the operating position.
- (2) Nos. 5 and 6 will let down and adjust the front left-hand corner jack.
- (3) Nos. 7 and 8 will let down and adjust the front right-hand corner jack.
- (4) Nos. 1 and 2 will let down and adjust the rear left-hand corner jack.
- (5) Nos. 3 and 4 will let down and adjust the rear right-hand corner jack.
- (6) The section leader will check the level of the trailer's floor by means of a spirit level. He will direct other personnel, stationed at the corner jacks, to raise or lower, as required.
- (7) Nos. 1 and 2 will mount the trailer and unlatch and open the monorail.
- (8) Nos. 7 and 8 will enter truck 1 and pass the dough-trough carriers to Nos. 3, 4, 5, and 6, who will take the carriers to Nos. 1 and 2. Nos. 1 and 2 will place the carriers on the monorail, fasten the gate sections of the monorail, then dismount from the trailer and go to the rear of the truck.

- (9) Nos. 5 and 6 will enter the truck with Nos. 7 and 8 and pass the dough trough containing the baking utensils to Nos. 1, 2, 3, and 4, who will place it at the rear of the mixing and make-up machinery trailer.
- (10) Nos. 5, 6, 7, and 8 will pass the four dough troughs in succession to Nos. 1, 2, 3, and 4, who will place them on the ground under the carriers. Nos. 1, 2, 3, and 4 will then remove the bakepans from the dough troughs and place them in the empty pan storage space.
- (11) Nos. 5, 6, 7, and 8 will get out of the truck and join Nos. 1, 2, 3, and 4 in fastening the four dough troughs to the carrier hooks.
- (12) Nos. 1 and 2 will remove the baking utensils from the dough trough and place them in operating position.
- (13) The section leader will give surface inspection to the various mechanisms on the trailer.
- (14) Nos. 1 through 8 will let down and adjust the corner jacks of the proofing and water trailer, assuming the same relative positions as in (2) to (4) above, inclusive.
- (15) The section leader will check the level of the proofing and water trailer by means of spirit level. He will direct other personnel, stationed at the corner jacks, to raise or lower, as required.
- (16) Nos. 1 through 8 will let down and adjust the corner jacks of the first oven trailer, assuming the same relative positions as in (2) to (4) above, inclusive. The trailer

will be leveled by section leader in the same manner as in (14) above. The second oven trailer will then be adjusted and leveled in the same manner.

Note. The electrician and the mechanic will work together. Their duties consist of preparing the generators for operation, running a power line to the lighting panel of the mixing and machinery trailer, running power lines to the proofing and water trailer and the two oven trailers, and installing the blowers and burners in the two oven trailers. The electrician will also check all motors on all trailers.

h. Steps Taken by Second Section.

- (1) Under direction of the section leader, Nos. 1, 2, 3, 4, 5, 6, 7, and 8 will place dunnage in the ingredient storage tent.
- (2) Under direction of the section leader, Nos. 1, 2, 3, 4, 5, 6, 7, and 8 will place the ingredient supplies on dunnage (fig. 12).
- (3) All hands will join the third section in finishing their work.

i. Steps Taken by Third Section.

- (1) Under direction of the section leader, Nos. 1, 2, 3, 4, 5, 6, 7, and 8 will unfold and place those bread racks which are set up at right angles to the tentage line (fig. 12). They will enter the right-hand end of the tent and, after placing each rack, will exit under the sidewalls of tent 3; hence, they will move in a circle.
- (2) As soon as these 11 bread racks are in position, Nos. 2, 3, 4, and 5 will start installation of the conveyor, beginning at a point adjacent to the ovens, as indicated in figure 12.

- (3) Nos. 1, 6, 7, and 8 will begin to unfold and set up those bread racks and tables which are placed parallel with the tentage line (fig. 12). They will enter the right-hand end of the tent and, after placing each rack, will exit under the sidewalls of the next adjacent tent as in step (1).

Note. When installation is complete, the second and third sections will wash and dry all bread racks and tables and wipe the conveyor. The first section will wipe all exterior surfaces of the mixing and make-up trailer and wash all interior or exterior surfaces which come in contact with dough or dough ingredients. If the first section finishes before the second and third sections, the first section will assist the second and third sections.

28. TAKING-DOWN OPERATIONS

Taking-down operations may be carried through by using the same section teams. If the machinery and equipment have been in satisfactory use up to the moment of beginning the taking-down operations, no surface inspection is required; whereas, if the operations have been suspended for even a short period, surface inspection is necessary. Report of all damage or excessive wear to parts must be made to the platoon leaders.

CHAPTER 5

PREPARATION FOR OPERATIONS

Section I. RECONNAISSANCE AND SITE SELECTION

29. RECONNAISSANCE

When reconnoitering for a site for the mobile bakery, the following factors must be taken into consideration:

a. Water. The mobile bakery should be located as close as possible to a plentiful supply of clean, pure water. About 100 gallons of water an hour will be required for each mobile bakery platoon (pars. 33-35).

b. Terrain. The mobile bakery should be located on firm, level, well-drained ground that will support the trailers and company vehicles under any weather conditions.

c. Weather. In cold weather the mobile bakery should be located in a sheltered area where natural protection is provided against both wind and cold. In hot weather the location should allow for as much air circulation as possible. In rainy seasons a location that might be flooded by rising water must be avoided.

d. Camouflage. Whenever possible, the operating site should provide natural concealment.

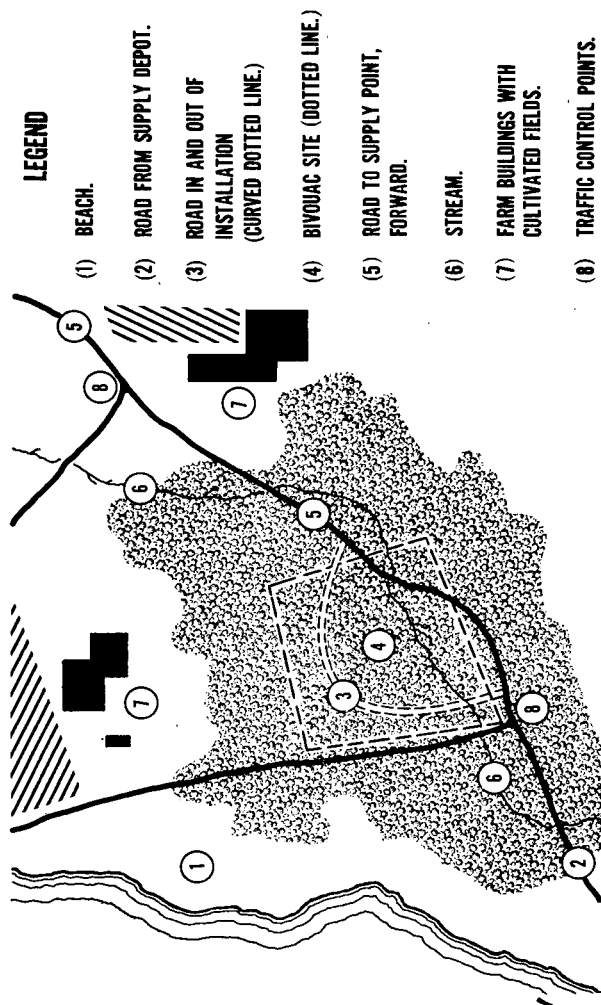


Figure 15. Bakery site in relation to road net.

30. SITE SELECTION

a. Location. The site for the mobile bakery should be close to an adequate road net and should include turn-around space for vehicles (fig. 15).

b. Concealment. When the mobile bakery is set up in an area subject to enemy attack, special precautions must be taken for its concealment. Whenever possible, the operating site should provide natural cover. A site under large trees and in screened coves is particularly desirable (fig. 16).

c. Space for Tents. Usually, the arrangement and spacing of tents will vary with each new bivouac. Each platoon lay-out, using tents shown in figure 11, has a floor area of approximately 2,516 square feet. An equal area should be allowed for space between tents, plus proper width of company streets and areas necessary for vehicle turn-around and parking space.

d. Site Checklist. The following checklist should be used as a guide when selecting a suitable site for the mobile bakery:

- (1) Accessibility to a sufficient amount of good water.
- (2) A good road net for supply and distribution and sufficient room for truck turn-around and parking.
- (3) Level ground for stationing the bakery trailers.
- (4) Sandy loam or gravel soil.
- (5) Firm turf.
- (6) Elevated, well-drained ground.
- (7) Protected slope or trees as windbreaks.
- (8) Firm ground for trucks and trailers.
- (9) Concealment from air observation.

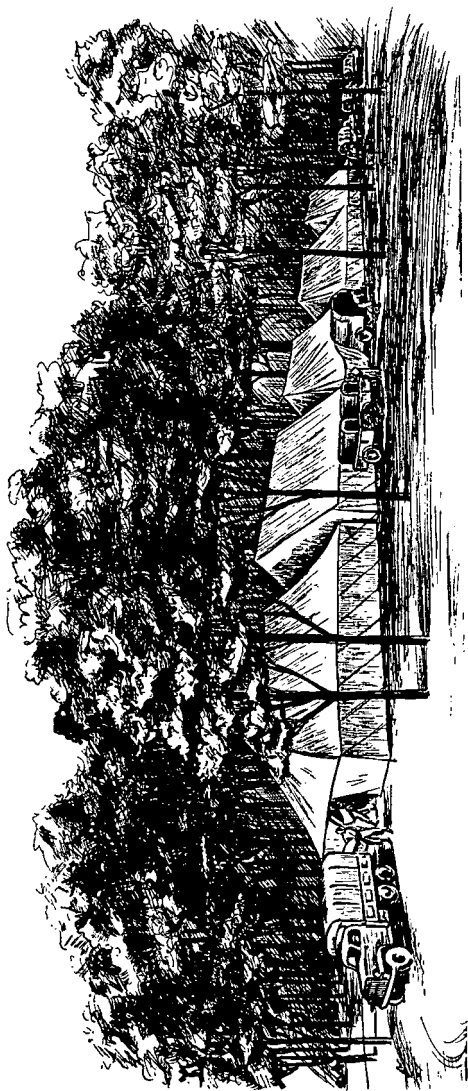


Figure 16. Bakery site under trees.

Section II. PLANNING FOR OPERATIONS

31. LAY-OUT

After the site for the mobile bakery has been selected, the plan for the lay-out of the tentage should be established immediately. Subject to terrain and concealment facilities, the following factors should govern the plan:

- a. Entrance and exit for vehicles as related to road net.
- b. Space for vehicles to maneuver within the bivouac.
- c. Traffic control at entrance and exit of the bivouac.
- d. Routing of mess line flow to avoid grouping of individuals.

32. TECHNICAL OPERATIONS

a. *Bread Ingredient Supplies.* As soon as the lay-out of the mobile bakery tentage has been completed, the company commander or his designated supply officer will communicate at once with the quartermaster unit responsible for the supply of bread ingredients. This unit is usually the nearest supply point. Once these arrangements have been made, the supply trucks pick up a supply of bread ingredients sufficient for 48 hours continuous operation. The actual amount is dependent on the number of individuals the bakery company may be called upon to serve.

b. *Storage of Bread Ingredients.* Special care must be taken to see that the ingredient supply tent is pitched in such a way that its immediate area will

drain readily; in addition, a drainage trench should be dug all the way around the tent.

c. *Flow of Operations in a Platoon.* The platoon is the basic operational unit of the company. The lay-out of equipment is planned to establish as nearly as possible a straight-line flow of work (figs. 11, 12, 13, and 14). The ingredients are first weighed out according to current formula, after which they proceed in the following sequence: to the dough-mixing machine; to the dough troughs; to the divider; to the molder; to the bakepans; to the proofing trailer (or cabinets); to the ovens; to the bread racks; to the delivery trucks; to the designated supply points for ultimate delivery.

Section III. DEVELOPMENT OF WATER SOURCES

33. GENERAL

Operations of the mobile bakery company require approximately 4,500 to 6,000 gallons of water a day. This amount of water includes bathing water for mobile bakery personnel and water required for cooking and washing, as well as ingredient water used in bread baking. If water sources are not known beforehand, they should be located by reconnaissance in advance of the arrival of the mobile bakery unit. All field sources of water should be considered unsafe until properly treated. Some water sources are safer than others; rivers and lakes are preferable to creeks and ponds, as, in the former, any contaminating material is more diluted. See TM 5-295 and TM 5-296.

34. WATER RESPONSIBILITY

The commanding officer of the mobile bakery unit is responsible that the unit uses water from approved sources only and that proper sanitation and discipline are observed in the handling of water supplies (TM 5-295).

35. WATER SOURCES

The order of selection, precautions to be exercised, and water treatment are covered in detail in TM 5-295 and TM 5-296. Table I, this manual, provides information on the effects of mineral or organic matter in water used in making bread and remedies to be taken.

Table I. Guide for water treatment

Type of water	Substances present	Effect	Remedy
Soft	Mineral-free	Softens gluten and makes sticky dough.	Use mineral yeast food or more salt.
Temporarily hard.	Calcium iron, magnesium, bicarbonate.	Retards fermentation.	Boil, filter, or use vinegar.
Permanently hard.	Calcium or magnesium sulfate.	Retards fermentation and toughens gluten.	Use more yeast and filter.
Saline	Sodium chloride (common salt).	Creates strong taste.	Reduce salt slightly or distill.
. . .	Iron	Heightens color . . .	Filter.
. . .	Sulfur	Creates unpalatable taste.	Aerate and filter.
Alkaline	Alkali, such as sodium carbonate.	Slows fermentation; creates bad taste.	Use vinegar, or lactic acid and more yeast.
Acid	Acid	Hastens fermentation.	Filter through limestone.
. . .	Sulfides	Dissolve gluten	Distill.
. . .	Manganese	Causes sludge in pipes.	Filter.
. . .	Suspended matter.	Produces cloudiness, dirt.	Filter.
. . .	Organic matter	Makes unsafe for human use.	Chlorinate (TM 5-295).

CHAPTER 6

OPERATION OF THE UNIT

Section I. METHODS OF OPERATING

36. BREAD PRODUCTION

a. Ingredients. The essential ingredients of bread are enriched flour, water, yeast, salt, sugar, shortening, and powdered milk. At no time will stock of any one baking ingredient be permitted to fall to less than a 24-hour supply. A mobile bakery platoon when operating separately will maintain a similar supply of ingredients.

b. Formulas. Although the basic ingredient formulas for bread are standard, they are flexible. Formula percentages must be changed slightly to meet the many variable factors encountered in bread baking, such as climatic temperature and humidity, type of flour and yeast, and the chemical content of the ingredient water. These changes in formula percentages are the responsibility of the platoon sergeant, the validity of the changes being dependent upon his experience and skill.

Note. The total ingredient weight for one full mixer charge is approximately 490 pounds. This is the amount of dough required to produce 216 2-pound loaves (36 pans, 6 loaves to the pan). Consult appendix VII, this manual, and TM 10-410 for standard bread formulas and for the method of converting formula percentages into ingredient weights.

c. *Preparation.*

- (1) *Flour, water, salt, shortening, sugar.* Carefully weigh the amounts of flour, water, salt, shortening, and sugar required by the formula.
- (2) *Yeast.* Carefully weigh and prepare the yeast according to its type.
- (3) *Powdered milk.* Carefully weigh the powdered milk. Mix powdered milk with the flour. The usual procedure is to mix the proper proportion of dry powdered milk with one bag of flour.
- (4) *Water.* Normally, the temperature of the mixed dough must be kept at approximately 80° F. This temperature is established by controlling the temperature of the water used in mixing the ingredients. To determine the proper water temperature, follow the steps illustrated in TM 10-410.

d. *Mixing.* Mix the ingredients by means of the electrically-driven mixer. To mix the ingredients proceed in the following manner:

- (1) Place the necessary amount of sugar and salt into the mixing bowl.
- (2) Run the necessary amount of water, less the water needed to dissolve the yeast, into the mixer and mix until the salt and sugar are dissolved. The ingredient water must be tempered to secure a dough temperature of approximately 80° F. at the end of the mixing cycle (TM 10-410).
- (3) Add about half the necessary amount of flour. Mix for 2 or 3 minutes. Use of only

half the flour forms a slack dough without placing undue strain upon the mixer.

- (4) Add the dissolved yeast and mix for 2 or 3 minutes. The water used to dissolve the yeast must be considered part of the ingredient water specified by the formula.
- (5) Add the remaining flour, mixed with the powdered milk, and mix thoroughly.
- (6) While the mixture is still lumpy, add the shortening. Do not add all in one piece. Break the shortening into small lumps and distribute them throughout the mixture.
- (7) To complete the mixing operation, run the mixer approximately 8 minutes more, keeping the ingredient temperature at approximately 80° F.

e. Fermentation. Remove the dough from the mixing bowl. Spread it evenly in one of the dough troughs. Push the dough trough (with cover in place) to the divider side of the trailer and let the dough ferment 2 to 2½ hours. After 80 percent of the established total fermentation time has passed, the dough should be punched. Near the end of the fermentation time, the dough should be tested by pressing it with the side of the hand. If the dough collapses when it is pressed, it is past the dividing point. Divide it immediately. If the dough remains the same after it is pressed (neither collapsing nor reforming), it is too young. Wait. If the indentation made by the hand in the dough closes slowly from the bottom of the depression to the top, it is just right for dividing.

Note. Punch the dough again before removing it from the dough trough to the divider. To punch a dough, push hands into the dough, then grasp one side of the dough and pull it on top, working from one end of the dough trough to the other. Repeat the operation, folding over the opposite side of the dough.

f. Dividing. Divide the dough into loaf-size pieces by means of the electrically-driven divider. To load the divider, remove the dough from the dough trough and place it in the divider hopper. At the start of operations, as each piece of dough drops from the divider pocket, check the weight of each piece. Make divider pocket adjustments until the divider is measuring and cutting off uniform 36-ounce pieces. This is usually the amount of dough necessary to produce a 2-pound loaf because 4 ounces are lost in baking. Spot-check the remaining dough pieces, as further adjustments are sometimes necessary during the run.

g. Molding. Mold the dough into loaf form by means of the electrically-driven molder. At the start of the operation see that the dough falls from the divider pocket onto the conveyor belt without sticking and goes through the rollers for flattening, under the screen for curling, and between the pressure plates for shaping. Make all necessary adjustments to rollers and pressure plate to produce a well-formed loaf of the proper length. Watch the dusting flour to see that the right amount is being fed in order to obtain a good seal and to prevent sticking.

h. Panning. Take the loaves as they come from the molder and place them in greased pans, spacing them evenly six loaves to the pan. Place each loaf straight in the pan with the seam of the loaf at the bottom.

i. *Pan-Proofing.* Place the loaves in the proofing cabinet and allow them to rise until about one-half inch above the sides of the pan. This will take 30 to 45 minutes. The temperature of the proofer should be from 90° to 100° F. with a relative humidity of 80 to 90 percent.

j. *Baking.* Transfer the loaves quickly but carefully from the proofer to the oven for baking. Load the bottom deck of the oven first. Bake the loaves for 60 or 70 minutes, depending upon the cycle used, and adjust temperature setting accordingly. Set the temperature control of the oven (flue gas temperature) at approximately 560° F. for the shorter bake. This high setting is necessary to maintain an over-all oven temperature of 450° F. during the operation of the oven. The temperature control need not be changed during loading and unloading, as the building up of flash heat between bakes is not recommended. After the baking period, remove the bread from the oven unloading the top deck of the oven first.

k. *Cooling.* Remove the bread from the pans without separating the loaves. If space permits, place the sheets of six loaves each flat on the bread racks. Otherwise, the sheets should be placed on edge. See that the racks are clean and that, if possible, the temperature of the rack area is not more than 85° F. and not less than 65° F. Let the bread remain on the racks until it is cool before issuing. The bread should be cooled for 2½ hours to 6 hours before it is issued.

37. OPERATING PERSONNEL

The operating personnel of the mobile bakery company (par. 12), together with their duties and responsibilities, are, as follows:

a. Section Leader and Assistant Section Leader. The section leader, who is aided in his work by the assistant section leader, is the noncommissioned officer who acts as foreman of his section. Operating under the sergeant, who serves as chief baker and prepares all schedules and formulas, the section leader is in charge of production during the bake shift. By constant personal supervision and inspection, he makes certain that all baking procedures are carried out properly and that all equipment is operated correctly. It is his responsibility to see that—

- (1) A supply of ingredients is maintained, that ingredients are stacked properly, and that ingredient storage area is kept clean and protected from insects and rodents.
- (2) Mixing and ingredient formulas are prepared.
- (3) Ingredients are weighed correctly and at the proper time.
- (4) All doughs are mixed at the correct time and complete schedules coordinated.
- (5) Men are on the job in time to get the dough ready on schedule.
- (6) Machines are set correctly for each particular dough.
- (7) Bakery area is kept clean at all times and that all mobile bakery machinery and trailers are cleaned.

b. *Mixers.* The mixing machine operators are responsible for the proper mixing of all doughs. They receive schedules and formulas from the section leader. Their detailed duties consist of—

- (1) Checking the quantity and quality of every ingredient before mixing.
- (2) Incorporating the ingredients in the mixing bowl.
- (3) Consulting with the general mechanic periodically to determine mixing-machine performance.
- (4) Maintaining responsibility for the dough until it is placed in the fermentation trough.
- (5) Recording the time of the dough on the dough trough cover before pushing it along the monorail to the divider side of the trailer.
- (6) Cleaning the mixer and greasing the mixing bowl with a light coat of shortening. The mixing bowl should not be cleaned with water. Use of water causes the packing gland to swell and as a result grease pills form throughout the dough.
- (7) Maintaining responsibility for the cleanliness and preservation of all equipment used in mixing doughs and thoroughly cleaning all mixing equipment at the end of each run.
- (8) Keeping the trailer floor and the area around the mixing machine clean at all times.

c. *Make-Up Men.* The make-up men are responsible for the fermentation, dividing, molding, and panning of the dough. Their detailed duties consist of—

- (1) Watching the dough during the fermentation period.
- (2) Punching the dough at the proper time.
- (3) Consulting periodically with the general mechanic to determine divider and molder performance.
- (4) Cutting the dough from the fermentation trough and placing it in the divider hopper.
- (5) Regulating the divider to measure and cut off a dough piece of the proper size and properly lubricating the divider.
- (6) Regulating the flow of flour from the flour dusters to keep the dough from sticking to the machinery.
- (7) Adjusting the divider dough guide so that the dough piece falls in the center of the divider conveyor belt.
- (8) Adjusting the molder rollers and molder pressure plate to produce a loaf of the proper shape.
- (9) Keeping a constant check on the weight of the dough pieces as they drop from the divider pocket.
- (10) Panning the loaves, seam down, as they come from the molder.
- (11) From time to time removing all flour from the divider and the molder flour-dusting hoppers and cleaning the sifting screens.
- (12) Keeping the trailer floor and the area around the machines clean at all times.
- (13) Cleaning the divider and molder at the end of each shift.
- (14) Maintaining responsibility for the dough until it is placed in the proofing cabinet for panproofing.

d. Proofer. The proofer is responsible for the operation of the proofing and water trailer (or portable proofing cabinet). His detailed duties consist of—

- (1) Maintaining a supply of water in the cold-water storage tank of the trailer for ingredient mixing.
- (2) Lighting burners when necessary.
- (3) Maintaining a supply of hot water in the hot-water storage tank of the trailer for ingredient mixing.
- (4) Operating the proofing cabinet air circulator and humidifier.
- (5) Bringing the proofing cabinet up to the proper temperature and relative humidity.
- (6) Assisting the molder in placing the panned loaves into the proofing cabinet.
- (7) Maintaining the proofing cabinet at a proper humidity and temperature.
- (8) Watching and timing the panproofing.
- (9) Notifying the oven operators when the panproofed loaves are ready for baking.
- (10) Removing the panproofed loaves from the proofing cabinet.
- (11) Assisting the oven operators in loading the ovens.

e. Oven Operators. The oven operators are responsible for the operation of the two mobile oven trailers. Their detailed duties consist of—

- (1) Running the oven blowers to ventilate the ovens before firing the burners.
- (2) Lighting burners when necessary.
- (3) Bringing the ovens up to the proper baking temperature.

- (4) Loading the ovens without jarring the pan-proofed loaves and causing them to fall.
- (5) Maintaining the ovens at the proper baking temperature.
- (6) Watching and timing the baking period.
- (7) Removing the bread from the ovens and placing it on the conveyors to be taken to the cooling racks.
- (8) Shutting off the oven burners and allowing the blower fans to run for a few minutes to exhaust the hot gases from the oven flues and ducts when bakery is shutting.
- (9) Seeing that the oven fuel tanks are filled for starting the next day's run.
- (10) Maintaining responsibility for the cleanliness and preservation of the oven equipment at all times.
- (11) Keeping the area around the oven trailers clean at all times.

f. Bread Racker. The bread racker's duties consist of—

- (1) Removing the bread from the pans and stacking the loaves on the racks for cooling.
- (2) Greasing the hot empty pans.
- (3) Maintaining an over-all police of the bakery area.

38. OPERATING SHIFTS

The three sections of each platoon of the mobile bakery company are employed in 8-hour shifts. However, when feasible, it is advisable to use only two shifts, freeing one section for other duties and allow-

ing time for maintenance operations, the shift length in hours to be determined by bread demand (table II).

Table II. Operating Shifts When Using Two Shifts Per Day

Day	Section number baking	Section number on other duties
1	1 and 2.....	3
2	3 and 1.....	2
3	2 and 3.....	1
4	1 and 2.....	3
5	3 and 1.....	2
6	2 and 3.....	1
7	1 and 2.....	3
8	3 and 1.....	2
9	2 and 3.....	1

39. DOUGH AND PRODUCTION SCHEDULES

When the mobile bakery is being operated at peak capacity, the 60-minute baking period is used. This, of course, entails perfect timing. It is therefore advisable, in most instances, to operate on a 70-minute cycle. The longer cycle is maintained with greater ease because it permits operational latitude to meet minor contingencies that often arise during baking operations. Usually the longer baking period also improves the quality of the finished product. When commencing operations and establishing time schedules for baking operations, the following dough and production schedules should be used for guidance:

a. Regular 60-Minute Cycle. When establishing a 60-minute baking cycle, consult appendix II.

b. Regular 70-Minute Cycle. When establishing a 70-minute baking cycle, consult appendix III.

c. Serving Capacity. The serving capacity of the mobile bakery varies with the bread content of the ration (app. IV).

Section II. RECORDS AND REPORTS

40. PRODUCTION RECORDS

a. General. Records of bakery operations normally are prescribed by higher authority. Standardized forms that may be used are as follows:

- (1) WD AGO Form 10-14 (Record of Bread Baked and Issued During Month).
- (2) WD AGO Form 10-17 (Ingredient Record).
- (3) NME Form 213 (Daily Record of Fuel Oil Consumption).
- (4) WD AGO Form 10-22 (Mixer's Daily Work Sheet).
- (5) WD AGO Form 10-23 (Make-up and Ovenman's Sheet).

b. Platoon Records. The minimum records to be kept by the platoon consist of—

- (1) Record of supplies drawn.
- (2) Record of supplies used and supplies on hand.
- (3) Record of operating shifts.
- (4) Record of ingredient formulas used.
- (5) Dough and production schedule.
- (6) Record of units served.
- (7) Schedule of deliveries.

c. Company Records. The minimum records to be kept by the company consist of—

- (1) Record of supplies drawn.
- (2) Record of supplies used and supplies on hand (app. IX).
- (3) Record of units served and a schedule of deliveries.
- (4) Record of platoon allotments and production schedules.

41. TECHNICAL REPORTS TO HIGHER HEADQUARTERS

a. Normally, technical reports of the mobile bakery company to higher headquarters will consist of summaries of production records. The reports should include the following information:

- (1) Number of ovens operating.
- (2) Number of hours of operation.
- (3) Number of pounds of bread produced.
- (4) Operating supplies used and operating supplies left on hand.
- (5) Lists of critically short items: supplies, spare parts, or tools.

b. The use of forms for periodic reports to higher authority will follow procedures prescribed in TM 12-250 and TM 12-255.

42. UNIT JOURNAL AND HISTORY

A unit journal should be maintained by the mobile bakery company. Such a journal should contain information and suggestions, based on actual field experience, which can be used to advantage by similar units operating under similar conditions. The jour-

nal should be a narrative which is primarily concerned with setting forth the record of events, actions, and operations. It should be accurate and adequate in the treatment of the subject matter. The manuscript should be forwarded to the next higher authority with notation to the effect that it is for the Historical Records Section, Departmental Records Branch, AGO.

Section III. OBTAINING TECHNICAL OPERATING SUPPLIES

43. SOURCES OF SUPPLY

In the field the mobile bakery company is usually bivouacked at or near a supply point from which operational supplies may be drawn. In occupied territory local supply sources may be used, provided the quality of the supplies is acceptable.

44. METHODS OF OBTAINING SUPPLIES

Normally, baking supplies will be drawn by the authorized headquarters officer of the mobile bakery company by means of requisition or daily request. When a platoon is operating separately, this duty will be performed by the platoon leader. Where the operating units of the bakery company are close enough together, all property and supply considerations will be controlled by company headquarters, and the operating units will draw operating supplies from that source. The quantities requisitioned will normally be based on past consumption, which will vary with the production requirements. Requisitions or daily requests will be submitted in accordance with standing operating procedure.

45. HANDLING OF SUPPLIES

a. Transportation. The mobile bakery company has sufficient organic transportation to enable it to pick up its own supplies as well as to deliver the baked bread (when the round-trip time does not exceed 10 hours). The vehicles allowed are shown in T/O&E 10-147.

b. Personal Cleanliness. All personal handling bakery supplies must be thoroughly instructed in personal cleanliness. Clothing should be clean. The hands should be carefully washed with soap and water and the nails cleaned before touching any of the bread ingredients or the finished product.

c. Storage. Ingredients should be kept in the storage tent provided for that purpose. Precautions must be taken to insure that—

- (1) Tentage does not leak.
- (2) Tent area is dry and adequately drained.
- (3) Adequate dunnage is used to protect supplies from ground moisture.
- (4) Adequate protection is provided against rodents and insects.

Section IV. OPENING-UP, TAKING-OVER, AND CLOSING-OUT OPERATIONS

46. OPENING-UP OPERATIONS

As soon as the mobile bakery company (or one of its elements) arrives at bivouac, the communications link must be established. The headquarters to which the bakery unit is responsible should be given the following information immediately:

- a.* Estimate of the time when baked bread will be ready for delivery.
- b.* Pounds of bread the unit is capable of producing per day.
- c.* Report on the volume of operating supplies on hand.
- d.* Statement of critical shortages of any kind.
- e.* Estimate of the expected daily requirements of operating supplies.

47. TAKING-OVER OPERATIONS

In assuming command of the mobile bakery company the responsible officer should take the following steps:

- a.* Check inventory against property, equipment, and supplies, making notes of condition of each item.
- b.* Secure transfer of unit funds.
- c.* Check roster against table of organization.
- d.* Check morning report against roster.
- e.* Check duty roster.
- f.* Check service records and qualification cards.

48. CLOSING-OUT OPERATIONS

When closing out the operations of the mobile bakery company, the responsible officer will communicate with the unit to which his element is administratively attached, giving the exact time operations ceased. If the bakery company is to be moved to another bivouac, the approximate time of departure should be communicated to headquarters and also the approximate time of expected arrival at the

new site. After the supplies and equipment have been loaded, the abandoned bivouac should be carefully policed.

Section V. OPERATING UNDER UNUSUAL CONDITIONS

49. COLD-WEATHER OPERATIONS

In cold weather both the equipment and the operating personnel of the mobile bakery company must be specially protected. A suggested floor plan to afford cold-weather shelter is shown in figure 14. A site should be chosen which lends itself to protection against prevailing winter winds. Gasoline, oil, or coal space heaters may be used to maintain the proper temperature for dough processing, provided adequate stovepipes are installed. Soot and fumes which are not carefully led outdoors quickly contaminate the bread ingredients. Salvage canvas may be pegged or staked to the ground to maintain floor warmth. In freezing weather, when a unit is shut down for even a short time, provision must be made for keeping the water in the various water storage tanks from freezing. If the unit is shut down for any length of time, all water tanks must be drained completely, all plugs removed, all valves opened, and all hoses drained. All water must be drained from the water pump. See TM 10-1699A and TM 10-1699C.

50. DESERT OPERATIONS

In hot weather the tent lay-out of the mobile bakery should be designed to take advantage of the prevailing winds. During a sand or dust storm all gener-

ators, bakery trailers, and mechanical equipment should be covered. After the storm all equipment must be cleaned with clean rags. Interior mechanism may be cleaned by blowing them out with compressed air. Before operations are resumed, mixer, divider, molder, proofing cabinet, and ovens must be wiped out on the inside with a clean cloth moistened with water.

51. HIGH-ALTITUDE OPERATIONS

At high altitudes no special precautions need be followed, but several adjustments are necessary. Carburetors on the electric generator plants, vehicles, and pumps must be adjusted. Some adjustment also is necessary on the oven oil burner and the proofing and water trailer burners.

CHAPTER 7

SECURITY, CAMOUFLAGE, AND DEMOLITION

52. SECURITY

The mobile bakery company must be prepared to provide its own security and to defend itself against air, ground, chemical, or mechanized attack. Generally, the company will fit into the defensive plan prescribed by higher headquarters. However, unexpected situations will often arise and the company must be able to act alone if occasion demands. Every man in the company should understand the principles of passive and active defense, the use of weapons, the demolition of supplies and equipment, and the use of camouflage and cover.

a. Bivouac Security.

- (1) The general location of the company bivouac will be determined by the command to which the company is assigned. After the general area is assigned, the company commander will select the specific location of the various units, taking into consideration convenience to the operating location, suitability of the ground, presence of overhead cover to prevent aerial observation, and accessibility to the road net. The area chosen should be well-drained high ground

which is defensible. Adequate space should be available to provide for dispersion.

- (2) The bivouac must be prepared for all-round defense. The defense plan of the unit should provide a job for every man and should be rehearsed until action in case of attack is automatic. The principles given in FM 72-20 are applicable to the mobile bakery company.
- (3) The defense plan must be flexible so that it can be adapted to the terrain and to the tactical situation. In general the outer ring of sentries should be about 1,000 yards from the command post. These sentries will serve as guards against attack by air or land or by chemical agents. The outer ring of guards should remain under cover and be checked at intervals by a roving patrol (FM 21-75). Approximately two-thirds of the remaining strength of the unit will be deployed to support the outer ring. The rest of the men will be held in reserve near the command post and will be committed only after the direction of the attack has been determined. Mines, booby traps (FM 5-31), and road blocks can be used to strengthen the position.

b. Individual Security. Each man must make his own preparations for security when attack is possible. His weapon must be ready for action and he must know how to use it. He must dig his foxhole, prone shelter, or other hasty fortification when the situation requires it. See FM 5-15.

53. CAMOUFLAGE

a. The principal defense of the mobile bakery company in the field is concealment (figs. 15 and 16). If natural concealment, such as woods, is not available for the bivouac, camouflage must be used. Military personnel must remain concealed, follow established roads and paths, hide any substance which might reveal their position by color or light reflection, and be careful not to change the appearance of existing buildings and terrain features. Company officers and noncommissioned officers must constantly impress upon the personnel under their command the fact that the carelessness of one man may disclose the position and endanger the whole group.

b. See paragraph 5, appendix XI, for publications describing camouflage procedure.

54. DEMOLITION

Demolition of supplies and equipment of the mobile bakery company to prevent their falling into the hands of the enemy is a command responsibility and should be effected only when ordered by higher authority. Demolition procedures should be standardized and should be simple, rapid, and effective. The tactical situation, time, and tools available will govern the method to be used when demolition is ordered. On all equipment the identical key mechanisms should be wrecked in order to prevent cannibalization. Explosives will be used when available, if time permits. Grenades and gunfire are next best. Ax and sledge blows may be used to good effect.

a. Supplies. Supplies on hand should be piled together, saturated with gasoline, and ignited.

b. Mixing and Make-Up Machinery Trailer. The destruction of the mixer, divider, and molder will make this trailer useless to the enemy.

c. Oven Trailer. As the ovens cannot be used except with the burner unit, the explosive charge should be placed in the burner chambers.

d. Water and Proofing Trailer. This trailer is rendered useless by the destruction of the humidifier, hot-water tank, and oil burner assembly. The explosive charge should, therefore, be placed in this compartment (rear of trailer).

e. Portable Flour Sifter. The explosive charge should be placed on the mechanism which vibrates the lower container.

f. Vehicles. In the demolition of gasoline engines the explosive charge should be placed on the cylinder blocks. Carburetors, timing devices, and generators should be destroyed individually, for which ax or sledge blows will suffice.

g. Generators. The explosive charge should be placed between the engine and the dynamo.

h. Miscellaneous Equipment. Such articles as the conveyor, bread racks, tables, and bakepans should be piled together and blasted, if time permits.

CHAPTER 8

MOVEMENT

Section I. MOVEMENT BY MOTOR

55. REQUIREMENTS

The mobile bakery company has sufficient organic transportation for its needs in a motorized movement. When changing from one location to another by motor, the mobile bakery company will move by functional units, the three mobile platoons moving independently of one another, each employing the vehicles assigned it. In like manner, company headquarters will move independently, using its own vehicles to move its equipment, records, and personnel.

56. PLAN FOR MOVEMENT

To insure speed and efficiency of movement of the mobile bakery company, loading plans and convoy serials should be uniform for all platoons.

a. *Platoon Loading Plan.* A suggested loading plan for each vehicle assigned the mobile bakery platoon is as given in table III.

b. *Platoon Convoy Serial.* The vehicles should be positioned in the convoy to afford the best protection of personnel and equipment against air attack. A suggested plan for establishing the convoy serial for the mobile bakery platoon is as given in table IV.

Table III. Platoon Loading Plan

Trucks		Truckload
Number	Type	
1	4-ton.....	Dough troughs, dough trough covers, dough trough carriers, ingredient cans, and scales.
1	2½-ton.....	Bread ingredients and pallets.
1	2½-ton.....	Bread racks, pallets, and dunnage.
1	2½-ton.....	Conveyors, conveyor supports, pallets, and dunnage.
1	2½ ton.....	Tents, tent pins, tent poles, and tables.
1	2½-ton.....	Personnel.
1	2½-ton.....	Do.

Table IV. Platoon Convoy Serial Plan

Position in convoy	Truck, truckload, and trailer
1	One 4-ton truck containing supplies and equipment and towing the mixing and make-up machinery trailer.
2	One 2½ ton truck containing tentage and towing the proofing and water trailer.
3	One 2½-ton truck containing ingredients and towing the first oven trailer.
4	One 2½-ton truck containing conveyors and towing the second oven trailer.
5	One 2½-ton truck containing bread racks and towing the first generator trailer.
6	One 2½-ton truck containing personnel and towing the second generator trailer.
7	One 2½-ton truck containing personnel and towing the 250-gallon water tank trailer.

Section II. MOVEMENT BY RAIL

57. REQUIREMENTS

a. General. When the total allowances of personnel and equipment of the mobile bakery company are to be moved by rail, sufficient freight and passenger cars will be provided. Requirements will vary in the theater of operations when foreign railroads are used. For more detailed instructions on rail movement of personnel and material, see references listed in paragraph 7, appendix XI.

b. Transportation Requirements. As soon as the company commander receives orders to move his company by rail, he will submit his transportation requirements in letter form to the local transportation officer in order to procure adequate transportation facilities. The letter will contain the following information:

- (1) Orders or instructions authorizing the movement.
- (2) Name of organization.
- (3) Number of officers, enlisted men, and vehicles.
- (4) Quantity of public property and authorized and checkable personnel baggage.
- (5) Date and place of entraining (if movement is in continental United States).
- (6) Destination (if movement is in continental United States).

58. PLAN FOR MOVEMENT

The commander of the mobile bakery company will be informed by the shipping transportation of-

ficer of the place where the equipment, both freight and passenger, will be put and of the time when the equipment will be in position for loading. It is the commander's responsibility to see that all plans are complete and all necessary assignments of personnel made for the movement of the unit.

a. Entraining Officer. The company commander will detail one of the platoon leaders for duty as entraining officer. The duties of the entraining officer are as follows:

- (1) To make a reconnaissance of the approaches to the entraining point in order that entraining may proceed without confusion, delay, or interruption from traffic.
- (2) To superintend the loading of both personnel and property.
- (3) To make the necessary arrangements to prevent delay in the loading of freight and baggage and to see that the loading is properly done.
- (4) To collect the checkers' lists and transmit them to the shipping transportation officer without delay.
- (5) To proceed to the entraining point in advance of the command and supervise the assignment of men to the cars; to allow only one entrance to each car to be used; and to instruct the men entering the car to proceed directly to their seats.

b. Train Transportation Officer. The company commander will detail one of the platoon leaders for duty as train transportation officer. The duties of the train transportation officer are as follows:

- (1) To make a record of the transportation requests as prescribed in AR 55-145.
- (2) To arrange with the train conductor to have the transportation requests taken up by the latter on the train. If such an arrangement cannot be made, the transportation officer must obtain tickets by presenting the transportation requests to the station agent prior to departure.
- (3) Accompanied by the train conductor, to count the passengers as soon after departure as possible.
- (4) To prepare a bill of lading for organizational equipment in accordance with instructions in AR 55-145 and to give this bill of lading to either the agent of the last carrier or to the transportation officer at destination.
- (5) To designate one noncommissioned officer for each car as checker, who will list the property loaded and record the data required for the preparation of the bill of lading.

c. Guard Detail. It is the company commander's responsibility that a guard detail be formed from the enlisted personnel. At least two men should ride in each unsealed freight car to guard the company equipment.

d. Baggage Detail. It is the company commander's responsibility that a baggage detail be formed from the enlisted personnel to load and unload the baggage.

e. Additional Duties of Company Commander. In addition to the duties already mentioned, the com-

pany commander will be responsible for the following:

- (1) Report of the exact time and date of departure to the theater traffic control division by telegram immediately before departure. Upon arrival at the destination he will also report the exact time and date of arrival. In his report he will indicate the movement by routing number only.
- (2) Appointment of a mess officer, who will supervise the preparation and serving of meals.
- (3) Issuance of orders to his company in conformity with AR 55-145.
- (4) Maintenance of a complete record of delays en route and any other occurrences that require the use of railway equipment after the scheduled hour of arrival at destination. Such record will answer questions which may arise as to the improper use of railway facilities.
- (5) Inspection of railway equipment which has been vacated to determine whether any railway property has been damaged or unlawfully removed. He will report the result of this inspection in writing to the commanding officer of the new home station.
- (6) Proper preparation of certificates as required.

f. Detraining. In peacetime, if possible, train schedules should provide for arrival at the destination point during daylight. Troops will be notified of the hour of arrival in ample time to enable them

to be prepared to detrain promptly. The officers and the guard detail will detrain first. The baggage detail will be left to unload and bring up the property. Where the camp is at a distance from the detraining point, arms may be stacked and the property unloaded by the entire company. The noncommissioned officers who acted as checkers when the property was loaded will, if practicable, be assigned the same duty in unloading.

g. Report Required for Separate Freight Shipment. When a freight shipment is made separately from a movement of personnel, the report to the commandant of the new station should contain the following information:

- (1) Routing by rail.
- (2) Car numbers (boxcar or flatcar) and general description of contents.

59. PACKAGING, BLOCKING, AND BRACING

a. General. It is the responsibility of the commander of the mobile bakery company to make sure that all company equipment is properly packaged, blocked, and braced. All railway shipments of bakery equipment whether scheduled for immediate oversea shipment or for delivery to storage and subsequent shipment overseas will comply with the requirements given in applicable specifications. The following publications also should be consulted:

- (1) Rules Governing the Loading of Commodities on Open Top Cars, published by the Association of American Railroads.
- (2) The Code of Rules for Loading Closed Cars, published by the Association of American Railroads.

b. Packaging. The following factors should be studied in deciding which container to use in a given instance (apps. V and VI):

- (1) Suitability to articles to be packed.
- (2) Availability.
- (3) Tare weight.
- (4) Cubic displacement.
- (5) Ease in handling and storing.
- (6) Cost.

c. Blocking and Bracing.

- (1) Standing procedure for blocking and bracing of rail shipments is to be found in Rules Governing the Loading of Commodities on Open Top Cars and in The Code of Rules for Loading Closed Cars, both publications issued by the Association of American Railroads.
- (2) The principal materials for blocking and bracing work usually are readily obtainable. In addition to wedge-shaped blocks and timbers required, heavy wire cables should be used for anchoring vehicles to the car floor. Crates and packages must be shored and braced in accordance with standard practices.
- (3) A method of blocking the special-purpose vehicles for shipment by rail is suggested in appendix VIII and figure 17.

Section III. MOVEMENT BY AIR

60. PREPARATION FOR MOVEMENT

a. Orders for movement by air are issued to the commander of the mobile bakery company by higher authority. At the same time, the air task force commander will receive orders to move the bakery company. When the orders for air movement are received, the bakery company commander will prepare a report for the air task force commander. The report will contain the following information:

- (1) Total weight and cubage of organizational equipment and supplies.
- (2) List of bulky items, including weight and cubage.
- (3) Number of personnel.
- (4) Amount of baggage.

b. The air task force commander will prepare a plan for movement, based upon the report from the bakery company commander, which he will submit to higher authority for approval.

61. PLAN FOR MOVEMENT

a. *Plans of Company Commander.* The detailed plans prepared by the bakery company commander will include the following:

- (1) Movement of unit from present location to vicinity of the departure airport, with marching and entraining tables.
- (2) Movement to loading points at departure airport.
- (3) Loading of trucks to correspond to loading of airplanes, if possible.

- (4) Orders for movement to loading points, including such matters as time, route, and loading arrangements.

b. Supplies and Equipment Load. In the continental United States, if the orders to move do not include specific items of supply and equipment to be excluded from the air shipment, the company commander will determine—

- (1) Tentage available at destination.
- (2) Operating equipment available at destination.
- (3) Vehicles at destination which may be utilized in place of authorized vehicles.

c. Packaging and Packing. The procedures for packaging and packing for air transportation are similar to those discussed in paragraph 59. Special emphasis should be placed on lightness of crating materials.

d. Personnel and Baggage. The type of plane, whether cargo, personnel, or personnel-cargo, will be determined by the air task force commander. The baggage of personnel will be carried either in the same plane with the men or in separate cargo planes.

CHAPTER 9

SAFETY PRECAUTIONS

62. GENERAL PRECAUTIONS

All bakery personnel will be thoroughly trained in correct safety procedures pertaining to the equipment of the mobile bakery company. All safety devices installed on the equipment will be kept in operating condition and all personnel will be instructed as to the use and purpose of these devices. Personnel who are not bakery operators will be kept out of the baking area.

a. Keep machinery and equipment free from unnecessary oil and grease.

b. See that cans are spaced in storage far enough apart so as not to present a good bombing target.

c. Mark fuel storage areas with proper signs.

d. Check all fuel containers before they enter the storage area and keep a constant check thereafter. Take immediate action if there are signs of corrosion, leakage, and general deterioration.

63. FIRE PRECAUTIONS

Since fire is the most common hazard in bakery operations, it is of utmost necessity that the following safety rules be observed at all times:

a. Know location of fire extinguishers and make sure that they are kept filled to the proper level.

b. Never leave cleaning rags around the machinery and equipment, for spontaneous combustion may result.

c. Never leave gasoline or fuel-oil cans on trailers or in baking area.

d. Do not smoke around the bakery area or while filling fuel cans and tanks.

e. In filling fuel tanks, make sure that correct fuel is put into proper tanks.

f. Do not refuel when burners are in operation.

g. Do not throw water on fires caused by electrical equipment, because electrocution may result. Use sand or dirt.

h. Keep sand buckets handy for use in case of incendiary bombs.

i. Make sure that flues leading from oven fire chambers are clear before lighting oven burners.

j. Do not allow rubbish or rags to accumulate around equipment.

k. Always store gasoline and fuel oil outside the operating area, preferably underground.

l. Be sure that the storage area for gasoline and fuel oil are far enough from the unit to preclude any possibility of fire from motor exhaust and to prevent the bakery unit from igniting if the fuel in the storage area catches fire.

m. Keep constant watch for leaks. Cover any spilled gasoline with sand or dry earth.

n. See that the fuel storage area slopes away from the bakery unit or build dykes to prevent oil and gasoline from flowing into adjacent areas.

o. In addition to the usual hand-operated extinguishers, use sand, steam, dirt, mud, and blankets to smother fire.

p. Enforce the NO SMOKING rule when handling fuels.

APPENDIX I

TABULATED DATA OF SPECIALIZED ORGANIZATIONAL EQUIPMENT

Article	Number in company	Dimensions*	Cubage (ft.)		Weight (lb.)	
			Per item	Total	Per item	Total
Trailer, mixing and makeup machinery...	3	16' 5" x 8' x 9' 3"	1,247	3,741	11,000	33,000
Trailer, proofing and water or	3	16' 6" x 7' 6" x 7' 4"	880	2,640	6,500	19,500
Cabinet, proofing, portable.....	6	5' 10" x 2' 4" x 5' 10"	73	438	386	2,116
Trailer, oven	3	16' 8" x 7' 6" x 7'	843	2,529	6,520	19,560
Trailer, 1-ton with 25 KW generator	6	12' x 5' 10" x 6' 4"	444	2,664	3,660	21,960
Trough, dough	15	6' 6" x 3' x 1' 10"	36	540	230	3,450
Sifter, portable, flour	3	3' x 3' x 5' 5"	49	147	190	570

*Length, width, and height are in this order, and include drawbars, lunettes, lifting eyes, door handles, etc.

APPENDIX II **REGULAR DOUGH AND PRODUCTION SCHEDULE** **60-MINUTE CYCLE**

Run	Dough	Mixing		Trough	Fermentation and 1st punch			2nd punch	Dividing and molding		Proofing		Oven		Baking	
		Start	Finish		Start	Punch	Finish		Start	Finish	Start	Finish			Start	Finish
1	1	0700	0715	1	0715	0850	0915	0915	0915	0930	0930	1015	1	1020	1120	
	2	0735	0750	2	0750	0925	0950	0950	0950	1005	1005	1050	2	1055	1155	
2	3	0810	0825	3	0825	1000	1025	1025	1025	1040	1040	1125	1	1130	1230	
	4	0845	0900	4	0900	1035	1100	1100	1100	1115	1115	1200	2	1205	1305	
3	5	0920	0935	1	0935	1110	1135	1135	1135	1150	1150	1235	1	1240	1340	
	6	0955	1010	2	1010	1145	1210	1210	1210	1225	1225	1310	2	1315	1415	
4	7	1030	1045	3	1045	1220	1245	1245	1245	1300	1300	1345	1	1350	1450	
	8	1105	1120	4	1120	1255	1320	1320	1320	1335	1335	1420	2	1425	1525	

Run	Dough	Mixing		Trough	Fermentation and 1st punch			2nd punch	Dividing and molding		Proofing		Oven	Baking	
		Start	Finish		Start	Punch	Finish		Start	Finish	Start	Finish		Start	Finish
5	9	1140	1155	1	1155	1320	1355	1355	1355	1410	1410	1455	1	1500	1600
	10	1215	1230	2	1230	1405	1430	1430	1430	1445	1445	1530	2	1535	1635
6	11	1250	1305	3	1305	1440	1505	1505	1505	1520	1520	1605	1	1610	1710
	12	1325	1340	4	1340	1515	1540	1540	1540	1555	1555	1640	2	1645	1745
7	13	1400	1415	1	1415	1550	1615	1615	1615	1630	1630	1715	1	1720	1820
	14	1435	1450	2	1450	1625	1650	1650	1650	1705	1705	1750	2	1755	1855
8	15	1510	1525	3	1525	1700	1725	1725	1725	1740	1740	1825	1	1830	1930
	16	1545	1600	4	1600	1735	1800	1800	1800	1815	1815	1900	2	1905	2005
9	17	1620	1635	1	1635	1810	1835	1835	1835	1850	1850	1935	1	1940	2040
	18	1655	1710	2	1710	1845	1910	1910	1910	1925	1925	2010	2	2015	2115
10	19	1730	1745	3	1745	1920	1945	1945	1945	2000	2000	2045	1	2050	2150
	20	1805	1820	4	1820	1955	2020	2020	2020	2035	2035	2120	2	2125	2225

11	21	1840	1855	1	1855	2030	2055	2055	2110	2110	2155	1	2200	2300
	22	1915	1930	2	1930	2105	2130	2130	2145	2145	2230	2	2235	2335
12	23	1950	2005	3	2005	2140	2205	2205	2220	2220	2305	1	2310	0010
	24	2025	2040	4	2040	2215	2240	2240	2255	2255	2340	2	2345	0045
13	25	2100	2115	1	2115	2250	2315	2315	2330	2330	0015	1	0020	0120
	26	2135	2150	2	2150	2325	2350	2350	0005	0005	0050	2	0055	0155
14	27	2210	2225	3	2225	2400	0025	0025	0040	0040	0125	1	0130	0230
	28	2245	2300	4	2300	0035	0100	0100	0115	0115	0200	2	0205	0305
15	29	2320	2335	1	2335	0110	0135	0135	0150	0150	0235	1	0240	0340
	30	2355	0010	2	0010	0145	0210	0210	0225	0225	0310	2	0315	0415
16	31	0030	0045	3	0045	0220	0245	0245	0300	0300	0345	1	0350	0450
	32	0105	0120	4	0120	0255	0320	0320	0335	0335	0420	2	0425	0525
17	33	0140	0155	1	0155	0330	0355	0355	0410	0410	0455	1	0500	0600
	34	0215	0230	2	0230	0405	0430	0430	0445	0445	0530	2	0535	0635
18	35	0250	0305	3	0305	0440	0505	0505	0520	0520	0605	1	0610	0710
	36	0325	0340	4	0340	0515	0540	0540	0555	0555	0640	2	0645	0745

Run	Dough	Mixing		Trough	Fermentation and 1st punch			2nd punch	Dividing and molding		Proofing		Oven	Baking	
		Start	Finish		Start	Punch	Finish		Start	Finish	Start	Finish		Start	Finish
19	37	0400	0415	1	0415	0550	0615	0615	0615	0630	0630	0715	1	0720	0820
	38	0435	0450	2	0450	0625	0650	0650	0650	0705	0705	0750	2	0755	0855
20	39	0510	0525	3	0525	0700	0725	0725	0725	0740	0740	0825	1	0830	0930
	40	0545	0600	4	0600	0735	0800	0800	0800	0815	0815	0900	2	0905	1005
21	41	0620	0635	1	0635	0810	0835	0835	0835	0850	0850	0935	1	0940	1040

APPENDIX III

REGULAR DOUGH AND PRODUCTION SCHEDULE 70-MINUTE CYCLE

Run	Dough	Mixing		Trough	Fermentation and 1st punch			2nd punch	Dividing and molding		Proofing		Oven		Baking	
		Start	Finish		Start	Punch	Finish		Start	Finish	Start	Finish			Start	Finish
1	1	0700	0715	1	0715	0850	0915	0915	0915	0930	0930	1015	1		1020	1130
	2	0735	0750	2	0750	0925	0950	0950	0950	1005	1005	1050	2		1055	1205
2	3	0815	0830	3	0830	1005	1030	1030	1030	1045	1045	1130	1		1135	1245
	4	0850	0905	4	0905	1040	1105	1105	1105	1120	1120	1205	2		1210	1320
3	5	0930	0945	1	0945	1120	1145	1145	1145	1200	1200	1245	1		1250	1400
	6	1005	1020	2	1020	1155	1220	1220	1220	1235	1235	1320	2		1325	1435
4	7	1045	1100	3	1100	1235	1300	1300	1300	1315	1315	1400	1		1405	1515
	8	1120	1135	4	1135	1310	1335	1335	1335	1350	1350	1435	2		1440	1550
5	9	1200	1215	1	1215	1350	1415	1415	1415	1430	1430	1515	1		1520	1630
	10	1235	1250	2	1250	1425	1450	1450	1450	1505	1505	1550	2		1555	1705

Run	Dough	Mixing		Trough	Fermentation and 1st punch			2nd punch	Dividing and molding		Proofing		Oven	Baking	
		Start	Finish		Start	Punch	Finish		Start	Finish	Start	Finish		Start	Finish
6	11	1315	1330	3	1330	1505	1530	1530	1530	1545	1545	1630	1	1635	1745
	12	1350	1405	4	1405	1540	1605	1605	1605	1620	1620	1705	2	1710	1820
7	13	1430	1445	1	1445	1620	1645	1645	1645	1700	1700	1745	1	1750	1900
	14	1505	1520	2	1520	1655	1720	1720	1720	1735	1735	1820	2	1825	1935
8	15	1545	1600	3	1600	1735	1800	1800	1800	1815	1815	1900	1	1905	2015
	16	1620	1635	4	1635	1810	1835	1835	1835	1850	1850	1935	2	1940	2050
9	17	1700	1715	1	1715	1850	1915	1915	1915	1930	1930	2015	1	2020	2130
	18	1735	1750	2	1750	1925	1950	1950	1950	2005	2005	2050	2	2055	2205
10	19	1815	1830	3	1830	2005	2030	2030	2030	2045	2045	2130	1	2135	2245
	20	1850	1905	4	1905	2040	2105	2105	2105	2120	2120	2205	2	2210	2320
11	21	1930	1945	1	1945	2120	2145	2145	2145	2200	2200	2245	1	2250	2400
	22	2005	2020	2	2020	2155	2220	2220	2220	2235	2235	2320	2	2325	0035

12	23	2045	2100	3	2100	2235	2300	2300	2315	2315	2400	1	0005	0115
	24	2120	2135	4	2135	2310	2335	2335	2350	2350	0035	2	0040	0150
13	25	2200	2215	1	2215	2350	0015	0015	0030	0030	0115	1	0120	0230
	26	2235	2250	2	2250	0025	0050	0050	0105	0105	0150	2	0155	0305
14	27	2315	2330	3	2330	0105	0130	0130	0145	0145	0230	1	0235	0345
	28	2350	0005	4	0005	0140	0205	0205	0220	0220	0305	2	0310	0420
15	29	0030	0045	1	0045	0215	0245	0245	0300	0300	0345	1	0350	0500
	30	0105	0120	2	0120	0255	0320	0320	0335	0335	0420	2	0425	0535
16	31	0145	0200	3	0200	0335	0400	0400	0415	0415	0500	1	0505	0615
	32	0220	0235	4	0235	0410	0435	0435	0450	0450	0535	2	0540	0650
17	33	0300	0315	1	0315	0440	0515	0515	0530	0530	0615	1	0620	0730
	34	0335	0350	2	0350	0525	0550	0550	0605	0605	0650	2	0655	0805
18	35	0415	0430	3	0430	0605	0630	0630	0645	0645	0730	1	0735	0845
	36	0450	0505	4	0505	0640	0705	0705	0720	0720	0805	2	0810	0920
19	37	0530	0545	1	0545	0620	0745	0745	0800	0800	0845	1	0850	1000
	38	0605	0620	2	0620	0755	0820	0820	0835	0835	0920	2	0925	1035

APPENDIX IV

SERVING CAPACITY OF EACH MOBILE BAKERY PLATOON

Number of doughs	Pounds of baked bread	Number of men served			
		6-ounce ration	8-ounce ration	10-ounce ration	12-ounce ration
1	432	1,152	864	691.2	576
2	864	2,304	1,728	1,382.4	1,152
3	1,296	3,456	2,592	2,073.6	1,728
4	1,728	4,608	3,456	2,764.8	2,304
5	2,160	5,760	4,320	3,456.0	2,880
6	2,592	6,912	5,184	4,147.2	3,456
7	3,024	8,064	6,048	4,838.4	4,032
8	3,456	9,216	6,912	5,529.6	4,608
9	3,888	10,368	7,776	6,220.8	5,184
10	4,320	11,520	8,640	6,912.0	5,760
11	4,752	12,672	9,504	7,603.2	6,336
12	5,184	13,824	10,368	8,294.4	6,912
13	5,616	14,976	11,232	8,985.6	7,488
14	6,048	16,128	12,096	9,676.8	8,064
15	6,480	17,280	12,960	10,368.0	8,640
16	6,912	18,432	13,824	11,059.2	9,216
17	7,344	19,584	14,688	11,750.4	9,792
18	7,776	20,736	15,552	12,441.6	10,368
19	8,208	21,888	16,416	13,132.8	10,944
20	8,640	23,040	17,280	13,824.0	11,520
21	9,072	24,192	18,144	14,515.2	12,096
22	9,504	25,344	19,008	15,206.4	12,672
23	9,936	26,496	19,872	15,897.6	13,248
24	10,368	27,648	20,736	16,588.8	13,824
25	10,800	28,800	21,600	17,280.0	14,400
26	11,232	29,952	22,464	17,971.2	14,976
27	11,664	31,104	23,328	18,662.4	15,552
28	12,096	32,256	24,192	19,353.6	16,128

Number of doughs	Pounds of baked bread	Number of men served			
		6-ounce ration	8-ounce ration	10-ounce ration	12-ounce ration
29	12,528	33,408	25,056	20,044.8	16,704
30	12,960	34,560	25,920	20,736.0	17,280
31	13,392	35,712	26,784	21,427.2	17,856
32	13,824	36,864	27,648	22,118.4	18,432
33	14,256	38,016	28,512	22,809.6	19,008
34	14,688	39,168	29,376	23,500.8	19,584
35	15,120	40,320	30,240	24,192.0	20,160
36	15,552	41,422	31,104	24,883.2	20,736
37	15,984	42,624	31,968	25,574.4	21,312
38	16,416	43,776	32,832	26,265.6	21,888
39	16,848	44,928	33,696	26,956.8	22,464
40	17,280	46,080	34,560	27,648.0	23,040
41	17,712	47,232	35,424	28,339.2	23,616
42	18,144	48,384	36,288	29,030.4	24,192
43	18,576	49,536	37,152	29,721.6	24,768
44	19,008	50,688	38,016	30,412.8	25,344
45	19,440	51,840	38,880	31,104.0	25,920
46	19,872	52,992	39,744	31,795.2	26,496
47	20,304	54,144	40,608	32,486.4	27,072
48	20,736	55,296	41,472	33,177.6	27,648

APPENDIX V

GUIDE TO CHOICE OF OUTER CONTAINER FOR SHIPMENT OF
BAKERY EQUIPMENT AND SUPPLIES¹

Article	Nailed wood crate	Cleated plywood box	Nailed wood box	Wire- bound box	Fiber box ²	Bale	Bundle
Structural parts, metal or wood.....	X	.....	.....	.....	.....	.....	X
Major items, machines.....	X	X	X	X	X	.....	.....
Tools and machine parts.....	X	X	X	X	X	.....	.....
Loose articles not liable to damage during transportation.	.....	.....	.....	.....	.....	X	X
Hardware and fittings.....	.....	X	X	X	X	.....	.....
Wire and cable.....	.....	X	X	X	X	.....	.....
Furniture, office and field.....	X	X	X	X	X	.....	.....
Office machinery.....	X	X	X	X	X	.....	.....
Kitchen and sanitary equipment.....	X	X	X	X	X	.....	.....

¹ This table does not cover those items governed by I.C.C. regulations in transportation of explosives and other dangerous articles.² Maximum weight of box and contents is 70 pounds for solid fiber box.

APPENDIX VI **GUIDE TO CHOICE OF INTERIOR PACKING FOR SHIPMENT OF** **BAKERY EQUIPMENT AND SUPPLIES**

Article	Bracing	Bolting	Flotation		Cartons and cans	Loose	Surface protection	Repacking	Corrosion preventive
			Heavy-weight	Light-weight					
Structural parts, metal or wood.	X	X							X
Major items, machines..	X	X	X		X		X	X	X
Tools and machine parts	X	X					X	X	X
Loose articles not liable to damage during transportation.						X			
Hardware and fittings...	X	X	X	X	X	X	X	X	X
Wire and cable.....	X	X	X				X	X	X
Furniture, office and field.	X	X			X			X	X
Office machinery.....	X	X	X		X			X	X
Kitchen and sanitary equipment.	X	X	X		X		X	X	

APPENDIX VII

FORMULAS

1. GENERAL

When converting percentages into weights the baker must remember that 100 percent is always used to express the flour content of the dough batch. The percentage of all other ingredients used is based on the amount of flour.

2. GARRISON BREAD

<i>Ingredients</i>	<i>Percent</i>
Flour.....	100
Water (variable).....	60
Yeast (compressed).....	2
Salt.....	2.5
Sugar.....	3
Shortening.....	5
Dry skim milk.....	6

3. FIELD GARRISON (SHEET) BREAD

a. Temperate and Frigid Climates.

<i>Ingredients</i>	<i>Percent</i>
Flour.....	100
Water (variable).....	54-56
Yeast (compressed) or yeast (active dry).....	2 1
Salt.....	2.5

<i>Ingredients</i>	<i>Percent</i>
Sugar.....	3
Shortening.....	4
Dry skim milk.....	2

b. Tropical Climate.

Flour.....	100
Water (variable).....	56
Yeast (compressed).....	1-1.25
or yeast (active dry).....	0.5-0.625
Salt.....	2.5
Sugar.....	2
Shortening.....	2

Note. Dough made in accordance with this formula in a tropical climate requires less than the normal time for fermentation and proofing.

APPENDIX VIII

BLOCKING AND BRACING FOR RAIL MOVEMENT

The following are the minimum requirements for securing the bakery company units to flat or drop end gondola cars (fig. 17):

Ref. No.	Number of pieces	Description
		Horses (2, 1 at each end of trailer):
①	2	Block, 3" by 1" by approx. 46" (front) and 42½" (rear)
②	4	Brace, 2" by 4" by 32"
③	4	Upright, 4" by 4" by height to suit
④	8	Cross member, 3" by 1" by approx. 42½" (front) and 46½" (rear)
⑤	8	Block, 3" by 1" by approx. 10"
⑥	4	Base, 2" by 4" by approx. 52"
⑦	8	Triangular wheel blocks, 10" by 15" by 18" by 3" thick, nailed to floor with 20-penny, 40-penny, and 60-penny nails (8 nails per block). ¹
⑧	2	Side wheel blocks, 4" by 4" by 28", outside of wheels, nailed to floor with four 60-penny nails. Must be beveled at top to prevent chafing of tires. ²
⑨	2	Landing wheel blocks, 2" by 4" by 12". If landing wheel clears floor more than 2 inches, height of blocks must be built up enough to prevent wobble of wheel. Minimum of No. 8 wire (or heavier) to be used for bracing. Placing of wire to follow standard practices.

¹Proofing and water trailer has single-tire wheels.

²Four blocks, 2" by 4", each secured with four 20-penny nails, may be substituted.

APPENDIX IX

SAMPLE FORM

DAILY PRODUCTION REPORT

Date _____

The _____ Quartermaster Bakery Company, Mobile.
Report covering period _____ hours to _____ hours.

Supplies	On hand from pre- vious day (lb.)	Consumed (lb.)	Balance on hand (lb.)	Number of days' supply on hand (at peak production rate)
<i>Ingredient</i>				
Flour.....				
Milk.....				
Salt.....				
Shortening...				
Sugar.....				
Water.....				
Yeast.....				
<i>Operating</i>				
Divider oil				
(in gal.)....				
Fuel (in gal.)				

Total weight of ingredients used.....lb.
Total weight of bread baked during period.....lb.
Total weight of bread left from previous day.....lb.
Total weight of bread on hand before issue.....lb.
Total weight of bread issued during period
of this report.....lb.
Total weight of bread remaining on hand
after issue.....lb.
Yield of baked bread per pound of flour*...lb.
Remarks:

Commanding Officer

*To get yield, divide weight of bread baked by weight of flour.

APPENDIX X

UNIT PROFICIENCY STANDARDS

The following is a checklist for training inspection of quartermaster bakery company, mobile.,

1. BASIC

- a.* Do the men have knowledge of first aid?
- b.* Are the men trained in map reading?
- c.* Are the men trained in proper conduct if captured?
- d.* Are the men trained in use of gas mask and other individual items of equipment for protection against chemical attack?
- e.* Are the men oriented in the mission of the unit?
- f.* Are the men trained in the proper use of their weapons?
- g.* Has each man completed his basic military training?

2. TECHNICAL

Are the personnel able to perform their primary mission? (Determine by spot check of each of the following types of operations. Set up special tasks for each.)

- a.* Section leaders.
- b.* Mixers.

- c. Make-up men.
- d. Proofers.
- e. Oven operators.
- f. Bread rackers.
- g. Bakery mechanics.
- h. Automotive mechanics.
- i. Truck drivers.

3. HOUSEKEEPING AND SUPPLY

- a. Is the unit supply section trained to function properly?
- b. Is the unit mess section trained to function properly? To eliminate waste?
- c. Is the unit administrative section trained to function properly?

4. PRACTICAL TEST OF COMPLETE UNIT

a. Set up problems involving conduct of the unit in the following operations:

(1) Selection of camp site and setting up of bakery for operation.

- (a) Does site afford the best facilities for properly servicing the troops?
- (b) Is proper distribution made of units?
- (c) Are roads and road conditions used to advantage?
- (d) Are reserve units available for emergency relief?

(2) Defense of bivouac.

- (a) Is the plan of defense tactically sound?
- (b) Are all personnel armed with permanently assigned weapons?

- (c) Does the plan for issue of arms and ammunition efficiently meet the requirements of speed, safety, and the proper safeguarding of weapons?
 - (d) Is the plan adequate for defense against ground troops? Paratroops? Air attacks?
- (3) Demolition of equipment.
- (a) Is the demolition plan technically sound?
 - (b) Is the plan tactically sound?
 - (c) Are all key personnel acquainted with the demolition plan and capable of performing it?
- (4) Showdown inspection of organizational and individual personal equipment.
- (a) Is organizational equipment complete and serviceable?
 - (b) Is individual equipment complete and serviceable?

b. Based upon the above problems, determine the following:

- (1) Can the unit perform its primary mission?
- (2) Can the unit service a designated number of troops?
- (3) Can the platoon perform its primary mission when it is operating as a separate unit?

c. Set up a problem involving the unit in offensive ground action as a combat rifle unit (covering tactical training in infantry soldier). Can the unit perform this mission in a (satisfactory) (very satisfactory) (excellent) manner?

d. Check operation and maintenance of the organizational equipment of the unit.

- (1) Are the vehicles properly operated?
- (2) Is the equipment properly maintained?
- (3) Is preventive maintenance practiced?
- (4) Are technical maintenance and operations instructions provided for each vehicle?

APPENDIX XI

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AR 245-5	Companies: General Provisions.
TM 12-250	Administration.
TM 12-255	Administrative Procedures.
TM 12-427	Military Occupational Classification of Enlisted Personnel.
TM 38-403	Station Supply Procedure.

2. BAKERY OPERATIONS AND MAINTENANCE

FM 10-5	Quartermaster Operations.
FM 10-10	Quartermaster Service in Theater of Operations.
TM 3-220	Decontamination.
TM 5-295	Military Water Supply and Purification.
TM 5-296	Ground Water Supply for Military Operations.
TM 10-410	The Army Baker.
TM 10-645	Fumigation and Bath Company.
TM 10-1699A	Bakery Unit, Mobile, M-1945, Mixing and Make-up Machinery Trailer.
TM 10-1699C	Oven Trailer of Bakery Unit, Mobile, M-1945.

TM 38-650 Basic Maintenance Manual.
TF 10-1479 Quartermaster Bakery Company,
 Mobile.

3. INDEXES

FM 21-8 Military Training Aids.
SR 110-1-1 Index of Army Motion Pictures and
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SR 310-20-3 Index of Army Training Publica-
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SR 310-20-4 Index of Technical Manuals, Tech-
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 Orders, Tables of Organization and
 Equipment, Reduction Tables,
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 Organization, Tables of Equip-
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SR 310-20-5 Index of Administrative Publica-
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SR 310-20-6 Index of Blank Forms and Army
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4. MESS MANAGEMENT

TM 10-205 Mess Management and Training.
TM 10-400 Stoves, Ranges, Ovens, and Cooking
 Outfits.
TM 10-405 The Army Cook.
TM 10-407 Cutting of Beef.
TM 10-408 Cutting and Preparing Lamb.
TM 10-410 The Army Baker.
TM 10-412 Army Recipes.

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FM 5-15	Field Fortifications.
FM 5-20	Camouflage, Basic Principles.
FM 5-20A	Camouflage of Individuals and Infantry Weapons.
FM 5-20B	Camouflage of Vehicles.
FM 5-20C	Camouflage of Bivouacs, Command Posts, Supply Points, and Medical Installations.
FM 5-20H	Camouflage Materials and Manufacturing Technique.
FM 5-31	Land Mines and Booby Traps.
FM 20-15	Tents and Tent Pitching.
FM 21-5	Military Training.
FM 21-20	Physical Training.
FM 21-75	Scouting, Patrolling, and Sniping.
FM 21-80	Recognition Training.
FM 22-5	Leadership, Courtesy, and Drill.
FM 23-7	U. S. Carbine, Caliber .30, M1 and M1A1.
FM 23-30	Hand and Rifle Grenades, Rocket, AT, HE, 2.36-Inch.
FM 26-5	Interior Guard Duty.

6. MOTOR OPERATIONS AND MAINTENANCE

FM 25-10	Motor Transport.
TM 9-803	Truck, 4 x 4, 1/4-ton (Willys-Overland Model MB and Ford Model GPW).
TM 9-809	Truck, 6 x 6, 2 1/2-ton (Cab Forward Model AFK WX-353).
TM 9-815	Truck, 4 x 4, 4-ton (4-Wheel Drive Model HAR-1).

TM 9-883	Trailer, Cargo and Water, 2-Wheel, 1-ton.
TM 10-580	Automotive Electricity..
TM 21-300	Driver Selection, Training, and Supervision, Wheeled Vehicles.
TM 21-305	Driver's Manual.
TM 37-2810	Motor Vehicle Inspection and Preventive Maintenance Services.
WD AGO Form 460	Preventive Maintenance Roster.

7. TRANSPORTATION

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AR 55-135	Transportation of Troops; Railway Equipment.
AR 55-145	Transportation of Troops; Entraining, Duties En Route, and De-training.
DA Pamphlet 29-15	Movement Regulations, Air Transportation.
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FM 31-25	Desert Operations.
FM 70-10	Mountain Operations.

FM 70-15	Operations in Snow and Extreme Cold.
FM 72-20	Jungle Warfare.

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FM 21-5	Military Training.
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ATP 21-1	Military Training Program for Newly Enlisted Personnel of the Army other than Air Forces.
MTP 10-1	Mobilization Training Program for Quartermaster Enlisted Personnel of the Army Service Forces.
MTP 10-2	Mobilization Training Program for Quartermaster Units of the Army Service Forces.

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